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THE MONTH

THE practice of medicine is not the unbroken sequence of dramatic events depicted by some of the more sensational media of communication. There are, however, occasions on which, not only are 'their lives in our hands' but a life may be dependent upon the prompt and active intervention of the doctor. The mere fact that these 'Emergencies in General Practice' are relatively so few and far between means that it is correspondingly difficult for the practitioner to keep in touch with the latest developments in dealing with them. Hence the reason for our symposium this month. It is seven years since our last symposium on this subject and we trust that our readers will find this new symposium as valuable as the last one. Whatever else may be taken away from the family doctor in these days of increasing specialization, it is still his lot to be called first to an emergency and it is largely upon his ability to make a rapid and accurate diagnosis, and prescribe and supervise the initial treatment that the life of the patient depends.

The Symposium

THE two recent reports on the maternity services—'Report of the Maternity Services Committee' (H.M. Stationery Office, price 6*s.* 6*d.*) and 'Maternity Services in Scotland' (H.M. Stationery Office, price 3*s.* 6*d.*) —must give 'furiously to think' all who are concerned with the future of the general practitioner as the family doctor. Perhaps the most interesting of all the recommendations is that Scotland should follow the example of England and Wales and introduce a list of general practitioner obstetricians. This decision was reached against the wishes of the Scottish Councils of both the College of General Practitioners and the British Medical Association. The view of both these bodies was that the family doctor should be in a position to undertake obstetrics for all his patients who wished him to do so, and that this is incompatible with an obstetric list.

The G.P. and Obstetrics

Two reasons are put forward by the English Committee for the tightening up of regulations for admission to, and retention on, the obstetric list which they recommend. One is that under present-day conditions the practice of obstetrics requires the exercise of special skill beyond the normal competence of the general practitioner. The other is that it requires a degree of experience the average family doctor is unlikely to be able to maintain. In support of this latter claim it is said that only 12 deliveries a year would be available for each general practitioner if he attended the domiciliary confinements of patients on his general list. The first of these

reasons is a disturbing commentary on the present state of medical education. The second has rather more validity but it is difficult to understand why the extra eight confinements a year which the committee insist upon as one of the conditions for retention on the obstetric list, should make such a tremendous difference. No-one will gainsay the necessity for insisting upon practitioners maintaining as high a standard in their obstetric work as in all other branches of their multifarious activities, if domiciliary confinements are to be encouraged as they ought to be. If obstetric experience is so hard to come by, then the logical solution is for one member of a partnership to accept responsibility for the management of all the confinements in the practice.

The Penicillin Story

THE announcement of the break through on the penicillin front achieved by the Beecham Research Laboratories would appear to open a new phase in the never-ending struggle with the micro-organisms that prey on mankind. The discovery of a method whereby 6-amino-penicillanic acid, the basic component of penicillin, can be isolated in quantity from the ordinary commercial penicillin fermentation process means that the biochemist will be able to make new penicillins almost at will. The chemical synthesis of penicillin on a commercial scale still eludes us, but this new discovery takes us a long way towards the goal of being able to produce new penicillins on a logical rather than a haphazard basis.

Time alone will disclose the full potentialities of this discovery, but already there is evidence that it should not be difficult to produce a penicillin which can be administered safely to those patients who are allergic to the penicillins at present available. The next step will be to try and produce penicillins which are lethal to staphylococci that are resistant to the available penicillins. The third stage, however, is the most intriguing of all. Will this discovery bring to an end the search for new antibiotics that has taken the representatives of the pharmaceutical companies of the world—and particularly of the United States—to the heart of Africa and the depths of the Amazon jungles in search of samples of soil that might contain a new dollar-spinning antibiotic? Will the biochemist now be able to produce 'tailor-made' penicillins active against almost any of the disease-producing micro-organisms? The possibility is one which will be the focus of attention for many months to come.

Cancer and the Public

RIGHTLY or wrongly the public are becoming cancer conscious. Inevitably their prime interest is in 'cures' and they cannot be blamed if they become easy prey to those who, today as throughout the ages, have not scrupled to profit from their gullibility in such matters. Equally understandable is their inability to appreciate why many a much publicized, plausible theory of the causation of cancer is ignored by orthodox research workers. On a more discriminating level, there are not a few members of our own profession who have been

disturbed to discover how little apparent interest the orthodox research worker takes in their suggestions and theories. It is easy to appreciate the difficulty of the research worker, and of organizations such as the Medical Research Council. Their plaint is that of Cecil Rhodes—'so little done, so much to do'—and, quite justifiably, they point out that in the present lack of knowledge concerning the causation of cancer a dispersal of facilities to deal with every theory put forward would lead nowhere.

On the other hand, the mere fact that our knowledge is so nebulous is a potent argument in favour of making sure that every possible avenue of approach is carefully examined before it is passed by. Further, as we have ourselves discovered recently in attempting to obtain an authoritative opinion concerning a reader's suggestion of a possible causative factor in the etiology of cancer of the lung, there is a tendency for the expert to be somewhat peremptory in his condemnation of new ideas. Doctors may understand, if not approve, this attitude, but the layman does not even understand it, with the inevitable result that he is an easy prey to the suggestion that the medical profession is not doing all it can to tackle the problem of cancer. As the public subscribe liberally for cancer research—in 1957, for instance, the British Empire Cancer Campaign alone received practically £720,000 in the form of donations and legacies from the public—they have a certain claim to reassurance that everything possible is being done with their money. By and large, this assurance can be given, but this would appear to be a case where justice must not only be done, it must also appear to be done. Would it not be possible for the British Empire Cancer Campaign to set aside a sum of, say, £5000 to set up a small department which would consider all suggestions submitted by either doctors or the public? No harm would be done, our patients would be reassured and—who knows?—the missing clue might be found.

Corporal Punishment

WHEN the Church, Law and Medicine unite in deprecating the abolition of corporal punishment, it is surely time for those in authority to pay a little more attention to those who have experience of handling the young and a little less to that vocal section of the community whose degree of vociferation tends to be in inverse ratio to their practical experience of dealing with the rising generation. It may have been coincidence, but it is certainly worthy of note, that the following comments on the subject appeared in print within a few days of each other. At the Central Criminal Court, the Recorder told two boys, aged 14, who set off home-made bombs outside buildings: 'It is a pity that both of you cannot be given a few strokes of the birch to bring you to your senses, but other steps have to be taken, more costly to the country and less effective'. One was sent to a remand home and the other to a detention centre. A Herefordshire rector told his congregation that there could not be redemption without punishment, and the best way to redeem young offenders who robbed elderly people with

violence was to let them feel the punishment on their own skins.

The medical comment comes from a doctor with wide experience of boys' clubs in the East End, who attended the Assizes in a southern town and published his account of it in the *Medical World*. In referring to three boys, aged 17, 16 and 15, who were charged with robbing another boy and were remitted either to a Borstal Institute or to an Approved School, he comments: 'I am certain that "six of the best" for the eldest and four and two for the younger ones would have been a better deterrent to others and better for themselves. A beating wipes the slate clean and is remembered painfully only on occasions which are relevant, but these sentences are going to leave permanently depressing, even degrading, memories. What lasting horrors our humanitarians have inflicted on youth'. Although not applied directly to this problem, the following extract from the annual report of the medical officer of health of Preston is of more than passing interest: 'The tough, hard-drinking, belt-wielding father of the past is much less in evidence today, but there is a weak, unreliable facile type of parent whose weaknesses of character and integrity are outside child comprehension and who inflicts incalculable harm on the unsuspecting child mind'.

T.B. in the West End

POVERTY and riches have traditionally lived cheek by jowl for many generations, and London is no exception. Behind the flashing lights of the West End and the resplendent restaurants lies a stratum of society which is too often forgotten except by the novelist, film director or newspaper reporter. How many of the bejewelled denizens of these internationally famous rendezvous ever think of the conditions under which lives the flunkey who greets them at the door or the waiter who serves the caviare? Perhaps it is just as well that such a thought never crosses their bemused minds. If any of them were to become so morbidly minded, they would find much to interest them in the records of the Westminster Chest Clinic.

As Dr. Cecily M. Tinker points out in a recent issue of the *Chest and Heart Bulletin* (1959, **22**, 26), the area covered by this clinic includes 'Mayfair, Soho, Clubland, Theatreland — the best-known hotels and restaurants and innumerable foreign bistros and night clubs'. Of the latest 116 newly diagnosed cases of tuberculosis, 20 per cent. were waiters, chambermaids, barmaids, publicans and kitchen workers, many of whom lived in common lodging houses. Thirteen per cent. of the new cases were recent arrivals from Mediterranean or Eastern countries. Workers in hotels and night clubs need to sleep near their work and therefore either share rooms in cheap lodgings or go to common lodging houses. The latter, Dr. Tinker notes, 'also provide a very necessary refuge for the alcoholic, the released prisoner, the discharged mental patient and the eccentric', not to mention many who have left sanatoria against advice. Against such a background the outlook for the control of tuberculosis loses some of the rosy tints in which it is so often painted, and the glamour of the 'West End' assumes something of the aspect of a 'whited sepulchre'.

SUDDEN LOSS OF CONSCIOUSNESS

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FACED with a patient who has suddenly lost consciousness and who is still unconscious on the arrival of the doctor, three questions only need be considered from the point of view of immediate treatment: (1) Is the case one of hypoglycæmia? (2) Is respiratory paralysis present? (3) Are there any reasons to suspect poisoning?

If the patient is sweating, *hypoglycæmia* is always a possibility (even in the presence of abnormal signs in the central nervous system), and the immediate exhibition of 20 ml. of 60 per cent. dextrose solution intravenously will bring most patients out of hypoglycæmic coma in a few minutes—and in any case can do no harm. A sterile solution of concentrated dextrose is a 'must' for the emergency bag but, if for any reason it is not available, 10 minims (0.6 ml.) of adrenaline injection B.P. subcutaneously will sometimes revive the patient enough for him to swallow glucose.

Respiratory paralysis is a feature of certain poisons, particularly carbon monoxide, which in high concentration can produce sudden loss of consciousness. The condition often calls for artificial respiration, which is discussed elsewhere in this symposium (p. 463). The Holger Nielsen method is the one now recommended by the British Red Cross Society.

If *poisoning* is suspected, gastric lavage, as described by Dr. Lockett in his contribution to this symposium, is indicated, the patient being prone with the head at a lower level than the body. For the wash-out ordinary water is preferable to sodium bicarbonate because the latter increases the solubility of the barbiturates so commonly nowadays the cause of coma.

If none of these first-aid remedies is indicated or effective, the best plan is to transfer the unconscious patient to hospital, preferably in the care of someone who knows how to maintain an adequate airway and, if necessary, carry out artificial respiration. A note to the hospital indicating the circumstances of the case is helpful, particularly if there is any question of trauma. Furthermore it is very important in an unconscious patient to feel the head carefully for evidence of a depressed fracture, a condition which is not infrequently missed.

CAUSES OF TRANSIENT LOSS OF CONSCIOUSNESS

If, as often happens, consciousness has been regained and the patient appears fully normal by the time the doctor has arrived the problem is entirely different, and the following common possibilities must first be considered: (i) A simple faint (syncopal attack). (ii) A psychogenic episode. (iii) An epileptic attack. (iv) An abnormality of cardiac rhythm.

A SIMPLE FAINT (SYNCOPAL ATTACK)

This is the result of acute cerebral anoxia due to marked vasodilation of the blood vessels, particularly those in the muscles, in which as much as 1.5 litres of blood may become pooled. The symptoms are dizziness followed by pallor, sweating, limpness and occasional twitching of the mouth, but no true fit occurs. The condition is common in adolescents and is due to emotional and physical factors—usually in combination. Good examples are prolonged standing and the witnessing of one's first operation, or attending early morning service for the first time on an empty stomach. Rapid recovery occurs when the patient is placed in a recumbent position and in many cases a doctor is never called in. A simple faint differs from postural hypotension in that in the former the attack is often not repeated in similar circumstances whereas in the latter sudden assumption of the erect posture is always likely to cause syncope.

A PSYCHOGENIC EPISODE

In these days of euphemisms, 'collapse', 'blackout' and 'shock' are the universal terms to describe fright, and many patients who are simply suffering from acute anxiety are 'rushed to hospital'. Having said this, it must be admitted that it is often extremely difficult to be dogmatic about the precise nature of a 'blackout'. Witnesses' stories may be inaccurate or exaggerated, and the best clue is often to be obtained by interviewing a near relative who can throw light on the 'background'. The problem generally is to decide whether the episode has been a faint, a fit or a hysterical attack. No one sign is pathognomonic and in my experience the hysteric seems to mimic epilepsy more accurately than formerly, so that even when all the evidence has been assessed the exact diagnosis may still be in doubt. In these circumstances a good general rule is to send the patient back to work without over-investigation, and to await events. This is particularly desirable in young women, who live on their emotions more than men and who often have hidden conflicts which they will not disclose to anyone—but which often solve themselves.

A girl of 23 gave a history of migraine and also of attacks of sudden loss of consciousness which from witnesses' accounts sounded very like true epilepsy. The 'migraine', however, often lasted several days and after the 'epilepsy' she remained drowsy and had a headache for as long as a week. The electroencephalogram (E.E.G.) showed 'a non-specific abnormality', but anti-convulsant drugs did not influence her favourably. On going into the history more fully it transpired that the 'migraine' first occurred after a stillbirth and the 'epilepsy' after the death of her mother. Moreover, there had been a hint of infidelity on the part of her husband. While in the ward she was at first very miserable with intractable headaches, but then she had a sharp attack of bronchitis and pleurisy and following this 'real' illness she became a different person, psychologically much more robust. The attacks ceased and were considered to have been of emotional origin.

Such a patient may easily be labelled epileptic.

One way of dealing with the doubtful case—the one who is perfectly well in hospital but who 'blacks out' as soon as she goes home—is to send the patient to work but require her to sleep in hospital. This 'middle course' is often very effective, though not always practicable.

AN EPILEPTIC ATTACK

The tonic-clonic sequence of major epilepsy is well known to all practitioners but minor attacks may be confused with syncope. In petit mal, however, the loss of consciousness lasts for a few seconds only, there is usually no fall and the attack is accompanied by staring or blinking. Table I gives some of the features which help to differentiate between epilepsy, hysterical episodes and a syncopal attack, but it must be emphasized that the points of distinction are not clear-cut.

Epilepsy	Hysterical episode	Simple syncope
Fairly constant periodicity. Often occurs in bed (particularly petit mal) as well as during the day. Duration—a few minutes. Post-epileptic phenomena may occur.	Follows an emotional crisis; usually in company. An attack may be prolonged to impress spectators. Complete recovery may be delayed for days.	Usually in the erect position. Emotion partly responsible. Very brief duration. Complete recovery in a few minutes.
Cyanosis may be noted.	Colour normal.	Facial pallor and sweating present.
Incontinence common.	Incontinence very rare.	Incontinence rare.
Tongue biting common and sometimes injury from falling.	Patient not hurt. No tongue biting.	Injury uncommon. No tongue biting.
Tonic and clonic phases. Definite march of events.	Movements spectacular—'threshing'—no clonic or tonic sequences.	Movements absent; rarely slight twitching of the mouth.
Corneal reflexes absent. Conjugate deviation of the head and eyes.	Corneal reflexes present.	Corneal reflexes usually present.
Plantar responses may be extensor.	Plantar responses absent or flexor.	Plantar responses flexor.
E.E.G. between attacks abnormal in about 80 per cent. of patients.	E.E.G. normal in 80 per cent. of cases.	E.E.G. normal in 80 per cent. of cases.

TABLE I.—Differentiation of epilepsy, a hysterical episode, and simple syncope. (Adapted from Cadman and Baker-Bates, 1957.)

If the attack is clearly an epileptic seizure, the possibility of its being the first symptom of a space-occupying lesion must always be considered, and this is particularly true in an adult having his first fit. On the other hand, it is not uncommon for adults to have an isolated fit which has no serious prognostic importance. This often occurred in wartime associated with an alcoholic bout. Nowadays, with barbiturates so freely dispensed, withdrawal of the drugs may occasionally precipitate a seizure. In older patients, whilst a cerebral tumour must be thought of, epilepsy is not uncommon due to small cerebral thromboses associated with cerebral arteriosclerosis. Each case must be dealt with on its own merits, but I am one of those who con-

sider that it is undesirable to investigate by air studies all patients who have had their first epileptic attack in adult life.

It must not be forgotten that convulsions sometimes accompany acute illness in infancy, and most frequently they are then symptomatic of an infection accompanied by mounting pyrexia. Over the age of six months the possibility that the fits are associated with rickets and due to lowering of the ionized calcium in the blood should not be overlooked. Hypocalcæmic states in adults may also 'trigger off' epilepsy, and where tetany is suspected the fits will promptly be relieved by the intramuscular injection of 5 ml. of a 10 per cent. solution of calcium gluconate.

Finally, the Munchausen syndrome should not be forgotten. One individual, not unknown to me professionally, with numerous scars on his head, is an adept at faking epileptic fits.

AN ABNORMALITY OF CARDIAC RHYTHM

The classical example of this is the Stokes-Adams seizure, due to ventricular standstill and occurring in the transition between partial and complete heartblock. Loss of consciousness may be very sudden and if prolonged there may be epilepsy. The pulse rate after the attack is commonly 30 to 40 a minute and the electrocardiogram will show some form of conduction defect. In the severest cases intracardiac adrenaline (0.2 ml.) should be given; it is useless to give it subcutaneously since the circulation is in abeyance. In cases which relapse, however, the drug is often useful in doses of 0.5 ml. subcutaneously. For the prevention of the attacks ephedrine is worth a trial given in doses of $\frac{1}{4}$ to $\frac{1}{2}$ grain (16 to 30 mg.) three times a day. Symptoms of Stokes-Adams attacks may also result from short episodes of ventricular tachycardia or fibrillation, but in such cases an electrocardiogram is necessary to make an accurate diagnosis. In this type of attack adrenaline and ephedrine are contraindicated.

Much more rarely loss of consciousness may occur in auricular flutter or paroxysmal tachycardia, when the ventricular rate is over 200 a minute.

RARER CAUSES

Carotid sinus syncope.—The carotid sinus is a dilatation of the internal carotid where it arises from the common carotid artery. In the wall of the sinus are sensory nerve endings which, when stimulated, slow the heart and cause a fall in blood pressure. The following two examples of carotid sinus syncope illustrate the need to bear this possibility in mind:—

A tram driver with a background of domestic worry was referred to a psychiatrist on account of attacks of syncope occurring only at work, and for which no organic cause could be found. The psychiatrist accompanied the patient on his tram and observed that the attacks always occurred at a certain place on the route. This was when the patient bent forward to look at the position of some points in the track and on doing so his neck was flexed against his collar with resultant pressure on a hypersensitive carotid sinus.

A man aged 55 who had previously undergone partial gastrectomy for a duodenal ulcer suddenly started to develop episodes of unconsciousness. His attacks were first considered to be epileptic and associated with hypoglycæmia, but the blood-

sugar levels were unconvincing. Next he was thought to be a psychological problem, and it was only when he complained of an ache in his neck that a small tumour overlying the carotid sinus was found. Removal effected a complete cure.

Subcutaneous adrenaline, 0.25 to 0.5 ml., is very effective in relieving the acute attack, and measures to improve the general health often diminish the sensitivity of the sinus.

Cough syncope.—The subjects are usually overweight, alcoholic males who are also heavy smokers and who suffer from chronic bronchitis and emphysema. The bout of coughing impairs the cardiac return and this produces cerebral anoxia and not infrequently loss of consciousness. Another example of interference with a proper return of blood to the heart is a ball thrombus of the left auricle, but this is very rare, and dizzy spells in association with mitral stenosis are much more often due to psychological causes.

Slight gastro-intestinal hæmorrhage.—The anæmia resulting from slight recurring blood loss from a duodenal ulcer may cause transient syncope.

A man aged 50 with no dyspeptic symptoms suffered from fainting episodes and because of these was afraid to ride his motor-bicycle. He had been through a good deal of strain and was thought to be suffering from an anxiety state. Later a frank melæna brought the correct diagnosis to light.

Aortic stenosis and aortic incompetence.—This is associated with an inadequate cardiac output and loss of consciousness may occur suddenly, particularly on exertion.

Postural hypotension.—Since the introduction of ganglion-blocking drugs for hypertension this event is not uncommon, but can be promptly relieved by telling the patient to lie down. Postural syncope also occurs rarely in middle-aged males in association with anhidrosis and impotence. More commonly it is due to a lax abdominal wall with splanchnic pooling. An abdominal binder will help this type of case. When postural syncope is associated with hypotension and symptoms are very intractable, steroids can be given in an attempt to raise the blood pressure.

Subdural hæmatoma.—Attacks of coma developing suddenly and followed by complete recovery are not uncommon.

An intelligent middle-aged man who had recently been overworked arrived at the outpatient department saying he felt perfectly well. His family, however, complained that he was irritable, easily confused and that occasionally he had become stuporose. There was no history of head injury and physical examination revealed no abnormality. So insistent was the patient that there was nothing the matter with him that the initial diagnosis was 'fatigue state'. Fortunately his son insisted that his father was not well. As a result he was reinvestigated, and later craniotomy was carried out with complete recovery after evacuation of a large subdural hæmatoma. The clue to the correct diagnosis should have been elicited earlier—the patient was an ardent ice-skater but thought nothing of his numerous falls!

Narcolepsy (*hypersomnia*).—Here the patient has attacks in which he becomes extremely drowsy and falls asleep in circumstances which are not inappropriate. The episodes are liable to be called hysterical. The condition can be greatly improved by amphetamine sulphate, 10 mg. after breakfast being often the right dose.

CAUSES OF PROLONGED UNCONSCIOUSNESS

Prolonged unconsciousness can be classified under the following headings:—

Traumatic causes.—The old problem of whether an injury producing loss of consciousness has been preceded by some intracranial disturbance (such as anoxia from any cause) must always be thought of, but the circumstances of the case usually point to the correct diagnosis. In concussion, the possibility of ensuing cerebral compression must be considered, and for this the observation of pulse rate, the presence or absence of vomiting and the size of the pupil (dilated on the affected side after a short period of contraction) are helpful. Important, too, is the occurrence of a lucid interval between initial concussion and the rapid onset of coma. This sequence is characteristic of middle meningeal hæmorrhage and immediate operation is indicated. In the general management of an unconscious patient in hospital the use of a sucker may be invaluable in maintaining an airway.

Cardiovascular causes.—Coma from cerebral hæmorrhage, cerebral thrombosis or embolism is usually easy to recognize from the signs of damage to the nervous system. Palpation of the carotid pulses should not be forgotten, for thrombosis of the artery is not uncommon. Occasionally cerebral thrombosis may be preceded by attacks of vomiting which may be erroneously diagnosed as due to food upset. When unconsciousness supervenes there are high-powered explanations about electrolyte disturbances. Mortification is complete on the following day when the patient recovers and is found to have a hemiplegia.

Subarachnoid hæmorrhage is usually easy to diagnose because of the neck rigidity, but in severe early cases this may be absent. Lumbar puncture settles the issue.

Occasionally myocardial infarction causes loss of consciousness. This occurrence means that the attack has been severe, the blood pressure is low and there is often abnormality of rhythm. In this type of case there may be no history of pain preceding the attack. With a pulmonary embolus (not necessarily large) reflex cardiac inhibition may result in syncope and must be thought of if more common causes have been excluded.

Syncope may also result from acute gastro-intestinal hæmorrhage. It is accompanied by pallor and a rapid pulse rate and the unconsciousness lasts much longer than in an ordinary faint.

Fairly sudden coma with paralytic or irritative phenomena may result from severe hypertension (hypertensive encephalopathy) and recovery from the episode may be remarkably complete. A similar condition is sometimes met with in uræmia and may be mistaken for cerebral hæmorrhage. Again the patient may recover after a hopeless prognosis has been given.

Rare conditions such as ruptured aneurysm of the aorta or hæmopericardium from other causes may produce cardiac tamponade and result in loss of consciousness proceeding rapidly to a fatal outcome.

Metabolic causes.—Hypoglycæmia is much the most important in this group and has already been dealt with. Although usually caused by an over-

dose of insulin (particularly the long-acting varieties) it should be remembered that it is occasionally 'spontaneous' and due either to an islet cell tumour, to Addison's disease, or to the Sheehan-Simmonds' syndrome, all of which occasionally present in this way and are usually misdiagnosed and may be fatal because not thought of. The sudden loss of consciousness of hypoglycæmia is in striking contrast to the gradual loss of consciousness resulting from diabetic or uræmic coma. In myxœdema unconsciousness may occasionally result from the hypothermia characteristic of the disease.

Toxic causes.—Carbon monoxide has already been mentioned and unconsciousness may be prolonged, permanent cerebral damage sometimes resulting. The latest ruling is that oxygen *and* carbon dioxide are better than oxygen alone for the emergency treatment. Most of the other poisons give some premonitory symptoms and consciousness is not lost suddenly, but miners who encounter a pocket of methane gas may be quickly overwhelmed.

Neurological causes.—*Status epilepticus* is a very dangerous condition, repeated fits occurring without the patient regaining consciousness in between them. The following plan of treatment is recommended:—

'Since paraldehyde is always available and is usually rapidly effective on intramuscular injection, this should be used first. The adult dose is 6 to 12 ml. repeated in four to six hours if necessary. (For a child 2 to 6 ml. may be used according to age). Alternatively, hexobarbitone, 0.5 to 1 g. in 10 per cent. solution intramuscularly, may be used and repeated if necessary every four to six hours. If these prove unsuccessful intravenous thiopentone or even chloroform anæsthesia should be used. After the status has settled, intramuscular phenobarbitone sodium, 3 grains (0.2 g.) every four hours, should be given for the next 24 hours and subsequently oral phenobarbitone in the doses required' (Ferguson and Liversedge, 1956).

Congestive attacks in syphilitic paralytic dementia (*G.P.I.*) are rare nowadays but remarkable when they occur. The patient is deeply unconscious for many hours, then recovers rather rapidly and may often be seen eating his breakfast as if nothing had happened. No special emergency treatment is indicated, but the cerebrospinal fluid always shows changes characteristic of syphilis.

Hæmorrhage or œdema into a *cerebral tumour* may cause sudden coma. The patient may then be tided over the immediate emergency by the judicious use of hypertonic (50 per cent.) sucrose—up to 50 ml. by slow intravenous injection (Ferguson and Liversedge, 1956). The same treatment can be given in cerebral compression due to any cause.

I acknowledge with thanks the great help that I have received in the preparation of this article from 'Emergencies in Medical Practice' edited by C. A. Birch (E. and S. Livingstone Ltd., 1956), and from my senior registrar, Dr. Sydney Cope of Broadgreen Hospital, Liverpool.

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EMERGENCIES IN INFANCY AND CHILDHOOD

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An emergency may be defined as an accident or an illness suddenly threatening life or future well-being and demanding urgent and effective treatment. The nature of the emergency varies according to age, season, domicile and so forth. For example, premature infants have a poorly developed cough reflex, and are apt to aspirate milk they have regurgitated. Toddlers burn themselves or swallow poisonous substances, whilst older children fall from a tree or a horse and crack their skulls. Bee-stings and snake-bite occur in the country and in summer. Children in towns are particularly exposed to road accidents, and those near a river to the danger of drowning or immersion.

Emergencies have become fewer because of better diagnosis, prophylaxis, antibiotics and advances in education and living standards. A changed outlook for children with congenital anomalies of the heart and great vessels has been made possible by techniques such as cardiac catheterization and angiography; diphtheritic croup has virtually disappeared; scurvy is uncommon and tetany rare because every mother knows that her baby must have orange juice and cod-liver oil. Older practitioners remember the many and sometimes dreadful complications that no longer take place because of antibiotics—one need only mention mastoiditis, lateral sinus thrombosis and intracranial abscess as the sequelæ to upper respiratory infections in small children, and now seldom seen. And finally, as we all know, human nature is such that, whilst some parents seem unable to grasp the danger threatening a child when it should be obvious, others are beside themselves with needless anxiety entailing stress and effort on the part of their doctor, usually at night. This he must not begrudge, for though an emergency, like beauty, may exist only in the eye of the beholder, it is none the less an emergency even when it calls for nothing more than sympathy and reassurance.

EMERGENCIES IN THE NEWBORN

Apnœa.—This is more of a hospital than a domestic problem because affected babies are generally born to mothers whose obstetrical difficulties have been foreseen. In the home, efforts to establish respiration must be made with the means to hand. A clear airway is fundamental. Mucus should be aspirated with a mucus extractor and the baby tipped with the head and mouth down to enable the discharges to run out. Hand rocking, mouth-to-mouth breathing, and oxygen, if available, by nasal catheter may be helpful.

The only drugs likely to be of value are adrenaline tartrate, 2 to 3 minims (0.12 to 0.2 ml.) of a 1 : 1000 solution, or caffeine sodium benzoate, ½ to ¾ grain (30 to 50 mg.) subcutaneously.

Cyanosis.—Premature babies are prone to attacks of cyanosis because of neuromuscular immaturity and atelectasis. In full-time infants with a clear airway, cyanosis may follow the injudicious use of analgesics or be a sign of brain damage, atelectasis or congenital heart disease. Cyanotic infants should be kept warm and removed to an oxygen incubator as quickly as possible.

Vomiting.—Obstruction due to congenital malformation of the digestive tract is met with much less often in general than in hospital practice, but its recognition is important as the results of operation are increasingly good. In œsophageal atresia swallowed fluid is forcibly returned after a moment or two with choking cough and cyanosis. Between feeds, frothy pink-stained mucus or bile-stained material may trickle from the mouth. If an attempt be made to pass a No. 18 Jacques red rubber catheter into the stomach it will stick where it meets the blind end of the œsophagus a few inches down.

Repeated and more or less forceful vomiting in the first day or two of life with abdominal distension and failure to pass meconium are signs of obstruction due to atresia of the duodenum, jejunum or ileum, malrotation of the gut, meconium ileus in congenital fibrocystic disease of the pancreas (mucoviscidosis) and Hirschsprung's disease. In high obstruction, distension if present is limited to the epigastrium. The rectum is found to be empty when the little finger is passed through the anus. In meconium ileus, it may be smeared with a little dry sticky meconium. In Hirschsprung's disease the signs of obstruction do not appear quite so early and may be delayed for several days; the anus looks small, and when the examining finger is withdrawn a considerable quantity of fluid meconium and flatus is released. Repeated finger insertion to this effect is, in fact, good treatment in the early stage of Hirschsprung's disease (Wyllie, 1957), in contrast to the immediate operative relief imperative in other cases of mechanical obstruction.

Convulsions.—Twitching and convulsions during the first week are most often due to brain damage from anoxia or hæmorrhage following a difficult labour. If the fontanelle is full and tense, a subdural hæmorrhage may be present and a subdural tap should be done as the withdrawal of blood at this stage may obviate the need for later operation; otherwise the infant should be sedated with chloral hydrate, 1 grain (60 mg.) every hour till quiet, and disturbed as little as possible for a few days.

Septicæmia and meningitis, tetany and kernicterus are much more infrequent causes of convulsions. Tetany should be thought of if there is evidence of laryngo-spasm and carpopedal spasm. A low level of ionized calcium in the serum confirms the diagnosis. Kernicterus with its characteristic opisthotonos arises about the fifth day in jaundiced babies with indirect serum bilirubin values above 20 mg. per 100 ml. It is a serious condition, occurs mainly as a complication of erythroblastosis, and can be pre-

vented by exchange transfusion on the first or second and subsequent days if necessary. The practitioner should be alerted to the possibility of hyperbilirubinæmia when jaundice appears early and deepens rapidly.

EMERGENCIES IN CHILDREN AND OLDER INFANTS

These include acute laryngo-tracheo-bronchitis, asthma, convulsions, coma, and poisoning.

ACUTE LARYNGITIS AND LARYNGO-TRACHEO-BRONCHITIS

These infections occur most frequently in children up to 4 years of age, as shown in fig. 1, and are dangerous because they are sudden in onset and

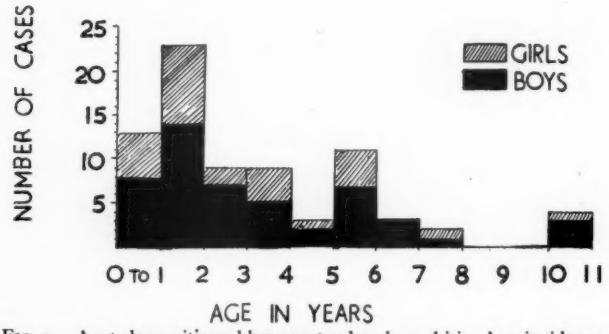

FIG. 1.—Acute laryngitis and laryngo-tracheo-bronchitis. Age incidence and sex of 76 cases admitted to hospital in 10-year period, 1949-58.

have a tendency to become rapidly worse, with mucosal swelling and œdema which quickly produce respiratory obstruction.

In supraglottic laryngitis there is fever, dyspnœa and stridor, but little cough. When subglottic, the infection may spread to the trachea and bronchi, dyspnœa is marked with cough and often hoarseness, stridor becomes expiratory as well as inspiratory, and rattling râles can be heard over the chest due to thick purulent exudate moving to and fro. As the illness progresses, indrawing of the lower ribs and sternum and supraclavicular tissues deepens, and patches of atelectasis and broncho-pneumonia appear as a result of tubal blockage and infection. Unless relieved by timely and well-directed therapy, the patient may die from suffocation, toxicity and exhaustion. The diagnosis is not difficult, but other emergencies causing stridor or dyspnœa, such as diphtheritic croup, laryngismus stridulus and retropharyngeal abscess must be ruled out.

Of 49 children with acute laryngitis (25 mild and 24 severe) and 27 seriously ill with laryngo-tracheo-bronchitis admitted to the Southampton Children's Hospital

or the Royal Hampshire County Hospital, Winchester, in the 10-year period 1949-58, 53 (70 per cent.) were 4 years or under, and 50 (66 per cent.) were males. Tracheotomy was performed on eight children, three of whom subsequently died; 75 were given antibiotics, 54 humidifying agents, and 18 were nursed in oxygen. There were eight deaths, a case fatality rate of 10.5 per cent., or 15.7 per cent. if only serious cases are taken into account.

Treatment depends to some extent upon the state of the patient, who should be visited frequently during the course of the day if kept at home. Streptomycin, 250 mg. 12-hourly, or chloramphenicol, 150 to 250 mg. 6-hourly intramuscularly, should be given, as well as 300,000 units of procaine penicillin 12-hourly by the same route. The atmosphere should be kept moist and cool with a mechanical humidifier, a steam kettle being next best. Danger signs indicating the need for tracheotomy are diminution of air entry judged by increase in indrawing and by auscultation, and sustained or increasing tachycardia and prostration. All but mild cases should be sent to hospital where they can be nursed in oxygen humidified with a detergent such as 'alevaire', and where tracheotomy can be done before the heart begins to fail.

FOREIGN BODIES

Foreign bodies are aspirated mostly by children between the ages of 1 and 3 years, often unknown to their parents. They produce wheezing, dyspnœa, cough which may be croupy, and perhaps cyanosis. The picture may closely resemble laryngo-tracheo-bronchitis if the foreign body is vegetable and its disintegration has led to inflammatory changes in one or both lungs and areas of atelectasis or emphysema. As vegetable foreign bodies are radiologically non-opaque, the diagnosis must be made by bronchoscopy. Foreign bodies should be removed without delay on account of the severe sequelæ such as pulmonary collapse, infection and bronchiectasis to which they can give rise.

ASTHMA

Asthmatic children and their parents differ greatly in response to the stress occasioned by an attack, so that some recover from a severe episode without difficulty whilst others less affected may not, tension in the household mounting to the point where the doctor has no recourse but to secure admission to hospital, when the attack subsides without more ado.

Status asthmaticus is an emergency of a more serious nature, less dependent upon psychological factors, and fortunately not very common in childhood. An attack fails to clear up in the usual way, and steadily gets worse with marked emphysema, dyspnœa, cyanosis, tachycardia and increasing exhaustion. Death sometimes supervenes despite all efforts at relief.

Treatment.—Most authorities consider that steroids are of value in resistant asthma, but as their maximal effect may be delayed for 24 to 72 hours when given by mouth, it is best to administer one of them as soon as it is apparent that the usual treatment is unavailing. Prednisolone, 5 to 10

mg., should be given every six hours until the attack begins to subside. A broad-spectrum antibiotic should be prescribed at the same time and continued for a week. Adrenaline tartrate, 1 to 2 minims (0.06 to 0.12 ml.), should be injected subcutaneously every minute for five minutes with the needle *in situ*. This can be repeated later if necessary, otherwise aminophylline can be given very slowly by the intravenous route: 250 mg. for children from 2 to 5, and 125 mg. under the age of 2 years. Older children need larger doses. Aminophylline is painful intramuscularly, but can usefully be given as a small retention enema, 5 grains (300 mg.) being dissolved in ⅔ ounce (20 ml.) of water, or as a 'cardophylin' suppository which contains 360 mg. of the drug.

CONVULSIONS

Convulsions create alarm because they begin abruptly and are dramatic, inexplicable and difficult to cope with. They may indeed be of serious significance as for example when they are symptomatic of meningitis, encephalitis or cerebral neoplasm. Most often they are of extracranial origin—a response to fever and infections in children predisposed to them—so-called febrile convulsions which are most frequent between 1 and 3 years of age. These can be unilateral or generalized, mild or violent, last a few minutes to some hours, and leave no ill effects except in a relatively small number of cases in which they are prolonged and may result in death or residual brain damage. Occasionally prolonged convulsions and brain damage are the prelude to a condition long-defined clinically as infantile hemiplegia in which there is a spastic paralysis of the arm and leg which may clear up but is often in some degree permanent, and associated with mental impairment. Convulsions may be recurrent in many spastic, brain-damaged and mentally defective children; in encephalopathies attributable to hypertension in nephritis, and to lead poisoning; and in slowly progressive conditions such as encephalitis periaxialis diffusa and amaurotic family idiocy.

Diagnosis and treatment.—As often as not the convulsions have ceased by the time the doctor has arrived, and the child is asleep or drowsy, and should be left undisturbed; otherwise measures should be taken to control the fits after a brief search for the underlying cause. It should be noted that abnormal neurological signs may be present for a short time after the convulsions have ceased. Persistence of neck stiffness indicates the need for an examination of the cerebrospinal fluid. There may be some difficulty in deciding about neck stiffness in infants, but a lumbar puncture should be done if there is any doubt, regardless of the fact that it could be caused by acute otitis media, painful neck glands, pyelitis and upper lobe pneumonia as well as by acute intracranial infections.

As an anticonvulsant, paraldehyde is quick, safe and effective. The dose is 1 ml. up to 1 year of age; 2 ml. up to 3; 3 ml. up to 5, and 5 ml. at 10 years. These doses should be doubled for rectal administration. If the

convulsions are not entirely relieved, phenobarbitone sodium should be given intramuscularly in addition: ¼ to ½ grain (16 to 30 mg.) under 2 years of age, and ½ to 1 grain (30 to 60 mg.) over 2.

When convulsions continue despite sedatives in doses that should be adequate, the child is in status epilepticus, and intensified treatment is called for in view of the danger of brain damage or a fatal issue. It is probably best to eliminate the fits with light ether anæsthesia and try to prevent their recurrence with chloral hydrate or amylobarbitone sodium rectally every three hours, substituting phenobarbitone by mouth as soon as the patient can swallow. The rectal dose of chloral can be calculated on a basis of ⅓ grain (20 mg.) per pound of body weight (44 mg. per kg.) for children up to 12 years of age. The dose of amylobarbitone sodium is ¾ to 1½ grains (50 to 100 mg.) up to 2 years and double that dose up to 5; and 3 to 6 grains (200 to 400 mg.) up to 10 years. These drugs should be respectively dissolved and suspended in 10 ml. of water.

VOMITING

Vomiting in children is a very common response to illness or emotion, and can be called an emergency only in special circumstances: e.g. when its continuation leads to exhaustion or dehydration and loss of electrolytes; or suggests serious liver damage as in the course of infective hepatitis; or when it signifies an acute abdominal catastrophe such as intestinal obstruction or peritonitis; and when the vomitus contains blood. Specks of blood may be seen after severe retching, but the vomiting of a large quantity of blood by a child in previous good health generally denotes gastric hæmorrhage due to thrombosis of the splenic vein, for which the immediate treatment is removal to hospital for transfusion. Intravenous glucose saline is called for in the repeated, often coffee-ground, vomiting that may occur in toxic cases of gastroenteritis, and in acute hepatic necrosis. Vomiting as a component of the periodic syndrome seldom lasts more than a day or two, and if it does, the diagnosis may need reappraisal, especially in cases seen for the first time. Repeated vomiting and drowsiness, for instance, may be the presenting symptoms in tuberculous meningitis.

COLLAPSE, UNCONSCIOUSNESS, AND COMA

Collapse may occur in premature and young infants who are kept insufficiently warm; or who contract a severe infection such as pneumonia; or aspirate water or milk; or are affected by cyanotic or other types of congenital heart disease such as paroxysmal tachycardia.

Infantile paroxysmal tachycardia probably occurs more often than people realize. The onset is within 6 months of age in most cases and may be precipitated by a cold or infection. The heart suddenly begins to beat at a rate between 160 and 300 or more per minute and the attacks may be signalized by pallor, a vomit and a tendency to collapse. Breathing becomes

rapid and the face ashen grey or slightly cyanosed. The tachycardia may last for minutes, hours or days, and the longer it lasts and the higher the rate, the more likely becomes cardiac failure with liver enlargement, crepitations and anasarca. Digitalis is the most effective drug to use to try and restore normal rhythm and prevent heart failure. Digoxin should be given orally or intramuscularly in a dosage of 0.05 mg. per pound of body weight (0.11 mg. per kg.) under 2 years and 0.03 per pound (0.066 mg. per kg.) over 2 years, divided into four doses over twenty-four hours. When the normal rate is established a daily dose of one-quarter the initial daily dose should be kept up for three to six months if there is a recurrence.

Loss of consciousness occurs in breath-holding attacks, epilepsy, fainting, concussion and hypoglycæmia; and coma in encephalitis, as a terminal phase of chronic nephritis and tuberculous meningitis, and in diabetes. Coma may supervene quite rapidly in diabetes mellitus, particularly when the disease is complicated by an infection.

Hypoglycæmic attacks from insulin overdosage are not unusual in the early stages of treatment of diabetes mellitus, and later sometimes result

Type of poison	Number of cases
Medicaments (126 cases)	
Salicylates	52
Barbiturates	14
Iron pills and mixtures	14
Others	46
Industrial and household products (91 cases)	
Paraffin	35
Turpentine	15
Others	41
Toadstools and berries	23

TABLE I.—Poisonous substances ingested by 240 children (1949-58).

from refusal of food or vomiting after the morning injection. Among the symptoms are flushing and sweating, interference with speech, disorientation, tremor and tachycardia, drowsiness, unconsciousness and convulsions. The parents soon learn how to abort the attacks by giving sweetened drinks; but should the child lapse into unconsciousness or convulsions, 5 to 15 minims (0.3 to 1 ml.), according to age, of a 1 : 1000 solution of adrenaline tartrate injected subcutaneously should restore the child sufficiently to enable him to swallow. Idiopathic or spontaneous hypoglycæmia, though uncommon, is by no means rare, and affects young infants, the signs and symptoms being similar to those induced by insulin overdosage. These attacks have long been considered to be due to functional overactivity of the islet cells, but recent work (Cochrane *et al.*, 1956) suggests that certain

amino-acids, notably leucine, a constituent of casein, may be responsible for the fall in blood sugar in some cases.

POISONING

Acute poisoning is discussed elsewhere in this issue (p. 457), but it would seem appropriate to make some reference to it here as it is so common in young children. In the 10-year period, 1949-58, 240 children who had accidentally swallowed noxious substances were admitted to the two main hospitals served by the writer (table I). Most children in this category are promptly sent to hospital so that this number probably accounts for the great majority of those involved. The poisonous substances consisted mainly of medicines, fuel oils and cleansing agents left within reach of the toddler. Offensive taste and smell were no deterrent. The amounts taken were often unknown or speculative, and the same applied to the interval that elapsed between ingestion and initiation of treatment. 139 (58 per cent.) of the children were boys, and 197 (82 per cent.) were 3 years of age or under. Treatment in hospital comprised various antidotes and restoratives, and gastric lavage was employed 184 times, generally within an estimated two hours of ingestion. There were two deaths: one from aspirin, and one from a substance composed of menthol and camphor.

Gastric lavage repeated half a dozen times with 6 or 7 ounces (180 to 210 ml.) of water is probably the best treatment if done early, save when lye, phenols, ammonia and strong alkalis and acids have been taken. Emetics are not without risk, but can be tried at home as first aid unless vomiting has already been active. Tartar emetic is the most reliable emetic and common salt solution the handiest.

CONCLUSION

The handling of emergencies is an important part of the family doctor's duties, involving the decision to treat the patient himself, or send him to hospital. Sometimes this decision is easy, for instance where accidents are concerned. At other times it can be quite difficult, for the clinical picture may be unusual, and family emotion, an unfavourable environment and pressure of other work are calculated to interfere with efficiency and judgment. Ultimate success in dealing with the urgent case essentially depends upon treatment based upon correct diagnosis and appraisal of all the factors affecting the prognosis, and this article has been written in the hope that it may be helpful from this point of view.

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GERIATRIC EMERGENCIES

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GERIATRIC emergencies may be grouped broadly under two headings: (a) medical and surgical conditions which are particularly common in the aged and which require urgent treatment, and (b) 'social' emergencies which arise against a background of the altered social and domestic conditions of the elderly in our community.

ANALYSIS OF EMERGENCIES

Members of the South-East Scotland Faculty of the College of General Practitioners (1957) have carried out a group investigation of emergency calls in general practice. Persons over 65 years of age accounted for nearly one-fifth of the total emergency calls and the more common illnesses seen were due to circulatory disorders, vascular and other lesions of the nervous system, fractures and other injuries, and respiratory disease. Analysis of emergency admissions of elderly patients to a London hospital (Exton-Smith, 1958) disclosed a slightly different picture since in these cases the nature of the illness or the social situation precluded treatment at home. As might be expected there was a relatively high proportion of abdominal conditions requiring surgical treatment (see fig. 1).

Abercrombie (1951) by analysing applications to the London emergency bed service has drawn attention to the remarkable increase in respiratory disease in the older age-groups occurring in January, February and March; the peak in January 1951 was seven times the average figure for the summer. With the exception of a slight increase in the incidence of heart disease in the winter months there was little variation throughout the year in the numbers of patients suffering from other medical and surgical conditions.

APOPLEXY AND TRANSIENT CEREBRAL DISTURBANCES

Apoplexy.—Apoplexy is one of the commonest medical emergencies affecting an elderly person. The condition quite naturally gives rise to the gravest disquiet in the minds of the relatives and there is usually an urgent request for medical attention. General measures applicable to all strokes, irrespective of the nature of the vascular lesion, must be initiated early with the aim of saving life and reducing subsequent incapacity. The shoulders should be raised and the head turned to one side in order to minimize the risk of aspiration of stomach contents. The pharynx should be kept clear of secretions by swabbing. Antibiotics should be given to reduce the chance of respiratory infection. The bladder should be emptied by the administration of carbachol (0.5 mg. subcutaneously) or by catheterization. If the patient is unable to swallow, nasal feeding will be necessary. Restlessness is

best controlled by an intramuscular injection of paraldehyde (5 to 8 ml.). As pressure sores can develop very rapidly in the unconscious, paralysed patient, attention must be paid to the pressure areas and the position of the patient changed frequently from the very start of the illness. The paralysed

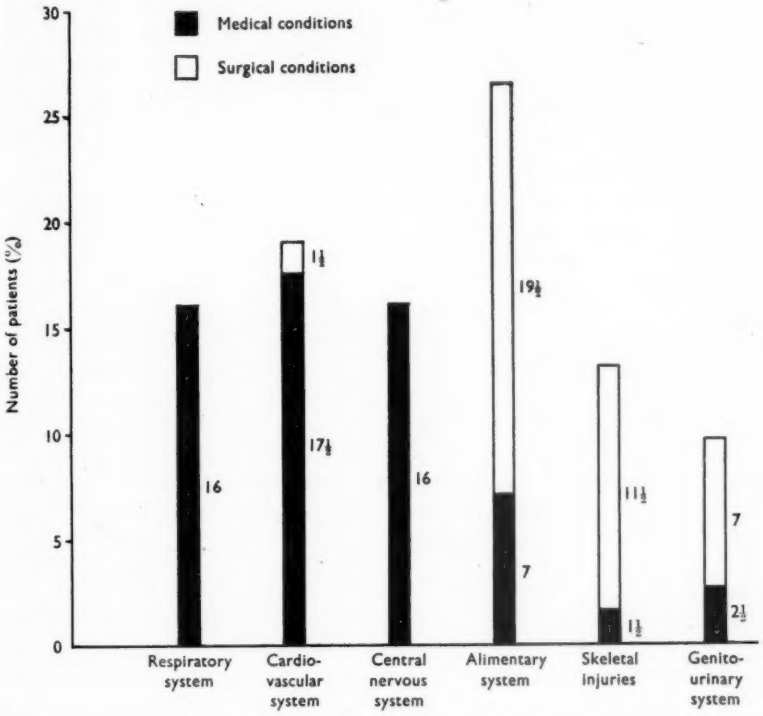

FIG. 1.—Analysis of disease in various systems according to final principal diagnosis in 200 emergency admissions of patients over the age of 60.

limbs must be put through a full range of movements several times a day in order to avoid the development of 'frozen shoulder' and contractures.

There is no doubt that early admission to hospital is desirable for most patients suffering from hemiplegia. Unsatisfactory domestic circumstances, and lack of frequent attention and of skilled supervision make the early treatment and later rehabilitation at home difficult; moreover, without adequate encouragement the older patient may quickly become reconciled to a life of inactivity in bed. Unfortunately many hospital staffs accept with reluctance elderly patients suffering from cerebrovascular accidents. Brown (1955) has shown that this attitude is unjustifiable; he found that only about

7 per cent. of hemiplegic patients over the age of 60 occupied a hospital bed for more than six weeks.

In many cases it is not possible to differentiate with certainty cerebral hæmorrhage from cerebral thrombosis, but this differentiation although desirable is not essential owing to the lack of specific treatment for the conditions. It is important, however, to recognize cases of hemiplegia due to subdural hæmatoma since appropriate surgical treatment may be life-saving; moreover, the possibility of now employing anticoagulant therapy in some cases of cerebral thrombosis has also established a need for more accurate diagnosis. This form of treatment can be instituted safely only in hospital. Fisher (1958) considers that anticoagulant therapy is more beneficial than any other mode of therapy used at present in cases of cerebral thrombosis encountered in the earlier stages. The main difficulty lies in the recognition of the 'earlier stages'. The value of anticoagulants has not been proven in the fully developed cases of cerebral infarction due to thrombosis.

Transient cerebral ischæmia.—It is not unusual for a practitioner to be called urgently to a patient who is said to have had a stroke or seizure, only to find that full recovery has occurred. On inquiry it may be found that during the attack one or more limbs had become weak and there had been a complaint of numbness in the hand or foot, dizziness, diplopia or dysarthria. Occasionally consciousness is lost, but convulsions, tongue-biting, cyanosis and blanching of the face are unusual. Whilst in a few instances Stokes-Adams attacks are responsible, in the majority of cases these seizures are of cerebral origin and are due to insufficiency in the carotid or basilar systems. With complete recovery following such attacks there may seem little need for treatment but these patients are suffering from cerebral atheroma and thrombosis in its 'earlier stages', and sometimes transient ischaemic attacks herald a major cerebrovascular accident.

Whilst transient cerebral ischæmia can occur in association with thrombosis in any cerebral artery, that attributable to basilar artery occlusion is particularly serious; the downhill course is likely to be rapid so that an apparently benign disturbance of motor and sensory function progresses to a severe degree of paralysis. The clinical features are variable and include weakness of part or all of one side of the body or both sides, anæsthesia in the limbs, dizziness, nystagmus, dysarthria, dysphagia, diplopia or blurred vision, headache and vomiting. Millikan and Siekert (1955) have described the favourable response to anticoagulant therapy in these cases. If the diagnosis can be established with reasonable certainty emergency treatment should be instituted by the administration of heparin intravenously every four hours for twenty-four hours, and at the same time starting a long-acting anticoagulant such as phenindione.

RESPIRATORY AND CARDIAC FAILURE

Bronchitis and respiratory failure.—Respiratory infection occurring during

the winter months in the elderly subject with chronic bronchitis and emphysema may quickly lead to the condition of respiratory failure. Indeed, the progress of the disorder may be so rapid that it proves fatal before therapeutic measures are instituted. The development of respiratory failure is indicated by rapid, shallow, gasping respirations, increasing cyanosis and the appearance of mental symptoms resulting from anoxæmia and carbon-dioxide retention. The mental disturbances may be mild, consisting of disorientation and confusion with restlessness, or the patient may become progressively more drowsy even to the degree of unrousable coma. Coarse irregular jerky movements affecting the fingers and arms are common. Coma is especially likely to occur in the patient who has, in addition, a chronic neurological disease such as Parkinsonism. Pulmonary hypertension (in part the result of anoxæmia constricting the pulmonary arterioles) may lead to cor pulmonale with a rapid pulse of increased volume and warm extremities.

Respiratory failure in the elderly subject with bronchitis and emphysema requires urgent treatment. Of the antibiotics, tetracycline, 500 mg. six hourly, is perhaps the most suitable and effective in general practice; alternatively, penicillin, 500,000 units, together with streptomycin, 1 g. six hourly, may be used. Chloramphenicol, although often effective, should seldom be used, since there is risk of agranulocytosis if further courses are given. Oxygen is essential in severe cases in order to prevent vascular collapse and death from progressive respiratory failure. At home it is best administered by a light-weight plastic mask. Oxygen given in high concentrations which completely relieve the anoxia may be dangerous; relief of anoxia removes the stimulus to the respiratory centre and the consequent rise in carbon-dioxide tension produces coma and irreversible medullary depression. This complication may be avoided by giving oxygen at a lower rate (1 to 2 litres a minute) so that a mild degree of cyanosis persists or by giving it in high concentrations (7 to 8 litres a minute) for periods of fifteen minutes, alternating with the breathing of air for a similar period. Aminophylline, 0.5 g. intravenously, is a valuable drug. If sedatives are required to subdue restlessness, paraldehyde, 5 ml. intramuscularly, is the best; barbiturates, even in small doses, produce marked respiratory depression and drowsiness in these patients and as little as 1/6 grain (10 mg.) of morphine may prove fatal. Sometimes morphine is mistakenly given because the patient is thought to be suffering from left ventricular failure; its depressant action must be rapidly combated by the administration of 10 to 20 mg. of nalorphine intravenously.

Occasionally the patient with acute respiratory failure is first seen *in extremis:* deeply cyanosed and comatose with shallow respirations and sweating. Westlake (1954) recommends that the emergency treatment consist of nikethamide, 10 ml., and aminophylline, 0.5 g., given intravenously, and oxygen by mask at 6 to 7 litres per minute. The effect may be dramatic and the patient recovers consciousness and sits up within ten seconds.

Cardiac asthma and left ventricular failure.—Acute ventricular failure is an important cardiac emergency occurring in elderly patients. It usually arises in those with hypertensive cardiac disease, but an attack may be precipitated by respiratory infection. Thus acute bronchitis may lead to an attack of cardiac asthma, and it is sometimes difficult to differentiate this clinical picture from that of bronchitis with respiratory failure. Myocardial infarction is also a frequent cause of an attack of cardiac asthma and the dyspnœa may overshadow chest pain. Emergency treatment of the patient with cardiac asthma consists of subcutaneous administration of morphine, 1/6 grain (10 mg.), preferably combined with aminophylline, 0.5 g. given intravenously. If the diagnosis is in doubt and chronic bronchitis with respiratory failure is thought to be a possibility, morphine must be withheld. If digitalis has not been given during the previous ten days, an intravenous injection of 0.5 mg. of digoxin is indicated. The patient is often most comfortable when sitting at the side of the bed with the legs dependent. Oxygen is desirable and should be administered as early as possible. To prevent further attacks on successive nights a mercurial diuretic should be injected the following morning, and digoxin should be continued by mouth until the patient is fully digitalized.

FALLS AND ACCIDENTS

Seventy three per cent. of fatal home accidents occur to people over 65 years of age. The liability to fall increases with age and failing strength is an important contributory cause. In a small number of cases a syncopal attack is responsible and this may be of cardiac or 'cerebral' origin. Vertigo producing loss of balance is a common cause of falling especially in women over the age of 75. There are two main forms: 'episodic' with no apparent cause, and 'postural' in which vertigo is produced by changes of position, especially by turning the head on the trunk. This movement can cause vertebral artery compression with impairment of the basilar circulation; other neurological signs of basilar artery insufficiency are often demonstrable in these cases. This may also be the mechanism of the so-called 'drop seizures' of the elderly, which take place without warning or loss of consciousness. By far the largest group of falls are associated with defective powers of locomotion due to general frailty, arthritis of the hips and knees, cerebrovascular disease or the residual disability following hemiplegia.

The death rate from accidents at home due to falls is steadily increasing. Even without serious injury an emergency situation may arise in the case of the old person living alone; due to loss of confidence and the pain of bruising he takes to his bed following a fall and so becomes totally dependent on outside help. Admission to hospital may be the only solution, not only to meet the immediate needs of the situation but also to restore the patient's confidence by painstaking rehabilitation. Thus the patient suffering from bruising alone may present as great a problem as one with a fracture.

One of the commonest and more serious skeletal injuries resulting from a fall is fracture of the neck of the femur. The frequent occurrence of this type of fracture in the elderly is due in part to the way in which old people fall, and in part to the high incidence of senile osteoporosis. Thus neurological signs of cerebrovascular disease, marked osteoporosis of the spine and the long bones and fracture of the femoral neck are commonly associated conditions. In those elderly persons who suffer from 'drop seizures' falling forwards may lead to a fracture of the sternum.

ACCIDENTAL HYPOTHERMIA

Accidental hypothermia is a hazard of the extremes of life.

In the series reported by Emslie-Smith (1958) the average age of the patients was 77 years; he described the typical electrocardiographic changes, which include an extra deflection at the junction of the QRS complex and the ST segment (J. deflection), usually most obvious in lead V4.

A common story is of the old person, often wet and partly clad, who is found stuporose on the floor in a cold unheated room in the winter months. It is most often seen in those who live alone and who may lie for a long time before help arrives, in those who have a tendency to fall, and when there is impairment of cerebral function due to cerebral arteriosclerosis. Myxœdema is sometimes present.

In the characteristic clinical picture there is a waxy pallor of the skin, slow respirations, slow pulse (sometimes with auricular fibrillation) and a low blood pressure. The patient may be stuporose or unconscious and have muscular rigidity of the limbs. The rectal temperature is considerably reduced and may be as low as 75° F. (24° C.). The treatment consists of warming the patient by an electric blanket to normal body temperature, the administration of cortisone (or hydrocortisone intravenously) and an antibiotic in an attempt to prevent broncho-pneumonia. The outlook, however, is grave and the patient often dies within a short time of admission to hospital. If the condition is suspected to be one of myxœdema coma, in addition to the above measures, tri-iodothyronine or thyroxine sodium should be given intravenously, but, as Mason (1958) points out, the coma is often irreversible and treatment ineffective.

ACUTE ABDOMINAL CONDITIONS

Standeven (1955) states that elderly people with acute abdominal emergency conditions withstand operation remarkably well, despite the presence of chronic lesions elsewhere, provided there is no undue delay in reaching the theatre and the minimal intervention necessary is quickly carried out.

In his series of abdominal emergencies in 120 patients over the age of seventy, strangulated hernia was the commonest condition; there was little difficulty in making the diagnosis and most patients were admitted to hospital early. Nevertheless there was sometimes a considerable delay in admission of patients suffering from Richter's hernia.

Most of the conditions which give rise to abdominal emergencies at a younger age are also seen in old age and for the most part there is no need for special comment. Apart from strangulated hernia, other causes of intestinal obstruction are carcinoma affecting the large bowel, adhesions, gall-stones in the terminal ileum and volvulus of either the small intestine or the sigmoid colon. In addition, two causes of obstruction deserve special mention because they are often overlooked.

Fæcal impaction, producing intermittent colicky pain, vomiting and sometimes spurious diarrhœa, often leads to the emergency admission of an elderly patient to hospital. Rectal examination is essential to make the diagnosis of this condition which, if left untreated, may prove fatal. Treatment consists of manual removal of the fæces followed by repeated enemas.

Small intestinal infarction, due usually to mesenteric artery thrombosis, is a condition almost confined to the elderly. Sullivan *et al.* (1958) have reviewed 34 cases and point out that it is seldom recognized clinically and that it is often fatal because of the delay in treatment. Pain is a prominent feature unless there is a clouding of consciousness due to associated cerebral arteriosclerosis; it is usually constant rather than colicky and is often generalized. Vomiting and diarrhœa also occur but in contrast to most of the acute abdominal conditions there may be little rigidity, guarding or rebound tenderness; leucocytosis is often marked. There are, however, no distinctive signs, but should the condition be suspected early surgical intervention is justified, and the infarcted length of bowel should be resected.

Appendicitis and diverticulitis are not uncommon in the elderly. In the case of the appendix, impairment of blood supply often leads to early development of gangrene; signs of acute inflammation may not be noticed and consequently diagnosis is delayed. There are many manifestations of diverticulitis and a diagnosis may not be made until there is involvement of the urinary bladder, abscess formation, large bowel obstruction or a massive hæmorrhage from one of the diverticula.

Two complications of peptic ulcer presenting as emergency conditions are worthy of mention. Perforation causes a high mortality in the aged and in a survey of 6,343 cases of perforated peptic ulcer in the West of Scotland (Jamieson, 1955) patients over 63 years of age accounted for one-third of the deaths. Although the highest incidence of perforation is now in the fifth decade, the average age at which this complication occurs is rising. The risk of death from hæmorrhage also increases rapidly with age, partly because hæmorrhage from arteriosclerotic vessels in the ulcer is likely to be severe, partly because loss of blood is poorly tolerated in the aged. Hæmatemesis occasions serious alarm in both the patient and his relatives and at the outset the doctor must be as reassuring as possible. In the severely agitated or shocked patient the administration of morphine $\frac{1}{4}$ grain (16 mg.) subcutaneously is desirable. The dangers of its use are chiefly from depression of the respiratory centre, especially in elderly patients with

emphysema, and the fact that the morphine itself may cause vomiting which in turn aggravates hæmorrhage. There is, however, less likelihood of this danger after only a single injection of morphine. Following the administration of morphine the patient is better able to withstand the journey to hospital. Admission is generally desirable since the dangers of moving the patient are considerably less than those of trying to treat him at home. Blood transfusion is usually required, since it is the only satisfactory means of elevating the blood pressure. Persistent hypotension in the elderly subject is likely to cause a confusional state and even cerebral infarction with hemiplegia. Loss of blood in the form of melæna is better tolerated than hæmatemesis; indeed, the patient may be unaware of gastro-intestinal hæmorrhage and the emergency situation arises when he collapses and loses consciousness as a result of cerebral anæmia.

'SOCIAL' EMERGENCIES

There is, of course, no clear-cut dividing line between those medical and surgical conditions occurring in old people requiring urgent treatment and those cases which may be grouped under the heading of 'social' emergencies. In the latter there is nearly always a physical or mental illness which makes the condition of life of an old person precarious, and the emergency usually arises with a change in social circumstances. In an analysis of 605 visits made at the request of general practitioners by a social visitor of the King Edward's Hospital Fund Personal Aid Service (Exton-Smith, 1958) 55 were considered to be 'social' emergencies (fig. 2). Elderly persons living alone and gradually falling into a state of increasing neglect are a cause of anxiety to practitioners, to the public health department and to the neighbours. These patients often surround themselves with collections of domestic rubbish, old newspapers, dirty milk bottles and the remains of partly consumed food. Their mental state varies from 'an obstinate independent nature' to a severe confusional state associated with senile dementia. Help offered is usually refused so that the patient becomes weaker as the result of malnourishment and finally bedridden. An 'emergency' situation may arise either from the risk of fire or when the patient antagonizes even the 'good' neighbour so that all help is withdrawn. In some cases compulsory removal to hospital under Section 47 of the National Assistance Act 1948 is required. When the need for the patient's removal is urgent the medical officer of health makes application to a Magistrate's Court for an 'emergency' removal order; this is usually a 'three-week' order in the first instance. This drastic measure is used only when all other means fail; moreover, when the social breakdown has reached the stage requiring compulsory removal the chances of rehabilitation are slight.

Illness of the relative on whom the disabled person is dependent or failure of a home help to attend may each lead to a 'social' emergency. In the case of falls, even though there may be no serious injury, an emergency situation

arises because an elderly person who was previously just able to manage alone can no longer do so after spending a few days in bed. Sometimes damage to the building, for example collapse of the ceiling or damage to the drains, may increase the domestic difficulties of a frail old person living alone so that he is unable to continue to manage independently.

Senile confusional states.—The largest group in this series consists of

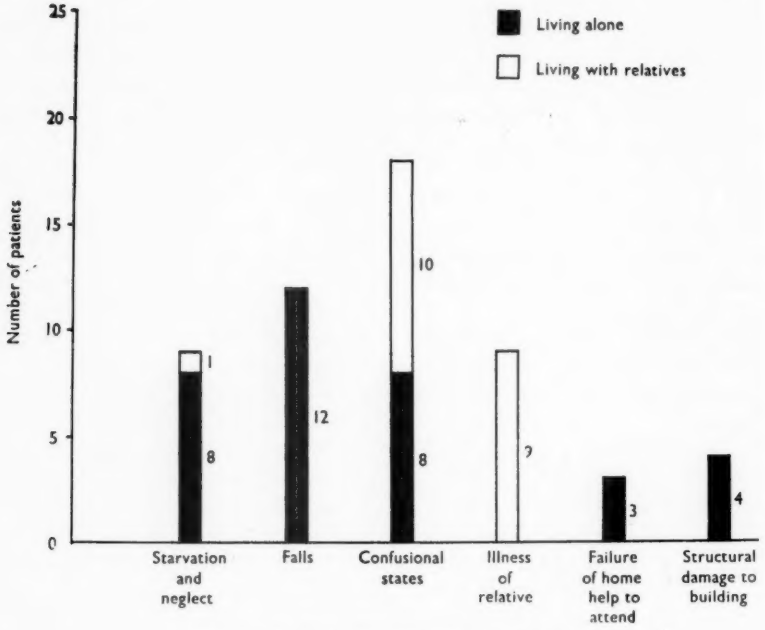

FIG. 2.—Analysis of 55 'social' emergencies.

patients exhibiting disturbances of behaviour due to mental confusion. It will be seen from fig. 2 that less than half of these patients lived alone. Although in most cases the relatives continue to look after members of the older generation who are mentally ill, with considerable devotion, quite suddenly they may reach breaking point and the general practitioner is confronted with demands for immediate relief of the situation which has now become unbearable. In some cases when such a family crisis has arisen admission to hospital is justifiable. But there is no doubt that, except in the later stages of senile dementia, these patients are happiest in their own surroundings and it is well known that loss of contact with familiar landmarks and with relatives is likely to aggravate the mental disturbance. Support should therefore be given to the family by the provision of home-

nursing services, sitters-in and arrangements for laundering soiled linen, and by controlling mild disturbances of behaviour and nocturnal restlessness with such drugs as chlorpromazine.

In any patient suffering from an acute senile confusional state diligent search should be made for a physical factor which may have precipitated it. Important causes in this respect are toxic-infective processes such as a urinary infection or pneumonia, uræmia, disturbances of electrolyte balance (especially lowered serum sodium or potassium levels in patients receiving diuretics) or repeatedly inadequate sedation with bromides or barbiturates. The correct treatment or the removal of these aggravating factors may lead to an improvement in the mental condition with only mild behaviour disturbances which can be managed at home.

In an efficient geriatric service the hospital must be prepared to admit all elderly patients who urgently require treatment. Remarkably few patients referred to hospital for emergency admission are found not to be in need of immediate treatment. Many of the patients presenting as 'social' emergencies will also require hospital treatment. Some, however, would be more appropriately cared for in Part III accommodation. The welfare authority must therefore make provision for emergency admissions of old people since otherwise many infirm elderly persons will be admitted to hospital when they require neither skilled nursing care nor medical treatment.

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PSYCHIATRIC EMERGENCIES

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PSYCHIATRIC emergencies do not occur often in the life of a general practitioner but when they do they are likely to bring his work to a standstill for the time-being. Moreover, they are impressive and long-remembered experiences for all concerned and the patient and his relatives are usually too involved emotionally to feel neutral in retrospect, so that the practitioner's ability in general may be judged by how he has dealt with the situation.

EQUIPMENT

In an urban practice where distances are short and communications easy, the most important thing to have at hand for serious emergencies is a list of telephone numbers, including those of the duly authorized officer of the local authority or its mental health department, and of a consultant who is able to arrange hospital admission. In rural areas, however, the practitioner must be ready to deal with a variety of situations where he finds them: from a suicidal attempt to an acutely excited or agitated patient who must be prevented from doing harm to himself or to other people. The following equipment will be adequate for most situations, including the treatment of the commoner forms of poisoning used in attempts at suicide:—

Injections:	Morphine	½ grain (30 mg.)
	Hyoscine hydrobromide	1/100 grain (0.6 mg.)
	Phenobarbitone sodium	3 grains (200 mg.)
	Chlorpromazine	50 mg.
	Paraldehyde	10 ml. ampoules
	Bemegride	10 ml. ampoules
	Picrotoxin injection B.P.	10 ml. rubber-capped bottles
	Apomorphine hydrochloride	1/10 grain (6 mg.)

The *syringe* carried should be such that there is no danger of the needle breaking off. A cartridge-syringe with a short needle is convenient for the smaller quantities, but in the case of paraldehyde given intramuscularly, a nickel-alloy lumbar-puncture needle ground to a length of 2½ inches and tied on to a nylon syringe is probably best. If the needle is inserted only to half its length and guarded by the thumb, the risk of breakage is very small indeed. Paraldehyde kept in a bottle is not self-sterilizing.

Other drugs:	Meprobamate tablets	400 mg.
	Amylobarbitone sodium capsules	3 grains (200 mg.)
	Chlorpromazine tablets	25 mg.
	Phenobarbitone	1 grain (60 mg.)
	Paraldehyde for oral use	
	Chloral mixture B.N.F.	

Other equipment: A clip-board for taking notes in inconvenient situations
An œsophageal tube no. 8, with funnel
A small cylinder of oxygen with 5 per cent. CO_2 (white and grey)
An expendable plastic mask (M.R.C. pattern)
An airway and mouth-gag
Pennies for public telephone

Whilst a great variety of emergencies can occur from the tragic to the ludicrous, the examples to be given will, it is hoped, point the way to dealing with most situations. By far the most important therapeutic agent is the creation by the practitioner of the impression that, however bizarre the situation, he knows what to do and is taking the matter seriously but with good humour. If he cannot give this impression he is likely to receive a great deal of unnecessary advice and will be pressed to take heroic measures by bystanders who will be the first to criticise if they are not effective. The patient, on his part, may see his opportunity and exploit any uncertainty to the full.

If it can be seen that immediate action is not imperative, it is best to take a history from relatives before approaching the patient. These should be seen separately, in one's car if privacy is not otherwise obtainable. Emphasis should be on finding out and recording briefly in their chronological order the events which led to the present situation, with rejection of theoretical explanations in favour of plain fact. No opinions should be offered at this stage. In the case of the excited patient, a confident look on arrival followed by a delay while the history is taken may lead to a much calmer atmosphere when one returns.

ACUTE STRESS REACTIONS

Sudden personal disasters may be followed by a state of distress which does not necessarily come on at once. In the case of bereavement, behaviour may be normal until the funeral is over and the guests have left. It often takes the form of agitated weeping in which refuge from reality is found in aimless activity. In the aged this may continue to the point of exhaustion. It may be difficult to make more than momentary contact with the patient but she should be encouraged to take a hot drink and go to bed, the immediate aim being to secure a long period of sleep from which she can awaken and gradually face the situation. Since the patient is already tired, amylobarbitone sodium, 6 grains (0.4 g.), will usually be sufficient to secure this. If there is no prospect of getting the patient to bed, meprobamate, 800 mg., will be more useful for its quality of lowering initiative and making the patient less sensitive to the circumstances. The situation may be complicated by alcohol and when this is so, screaming and erotic behaviour may call for more active measures. Phenobarbitone sodium, 3 grains (0.2 g.) intramuscularly, with hyoscine hydrobromide, 1/100 grain (0.6 mg.) if there is much movement, will then be needed. Care should be taken that the patient is not left alone and it is often best that she stay with relatives. Meprobamate, 400 mg. thrice daily, may be given for two days. Occasionally one meets women who specialize in attending funerals and having 'hysterics' even though they have hardly known the deceased and these displays may act as a precipitating cause of breakdown in others more nearly involved. They can usually be brought to reason by a discouraging word and lack of interest. If relatives suggest the cold water cure, it may be well to stand aside.

ACUTE AGITATION

Quite apart from sudden stress, a crisis of agitation may occur either at the onset of a severe depressive illness or in the course of an anxiety state exacerbated by current mental conflicts. Restless pacing of the floor, inability to sleep and outbursts of irritability or tears are the main features. The first essentials are to converse with the patient and to assess, if the patient is depressed, whether there is any possibility of a suicidal attempt. Meprobamate, 800 mg., or capsules of amylobarbitone sodium, 6 grains (0.4 g.), butobarbitone, 3 grains (0.2 g.), or pentobarbitone capsules, 4½ grains (0.28 g.), should be given at once or, in the elderly, a single draught containing chloral hydrate, 20 grains (1.3 g.) or 30 grains (2 g.). If the patient can be observed and helped by relatives, a hot bath will often help the patient while the drug is taking effect. Such patients should be seen on the next day and an attempt can then be made to find out the background of the trouble with a view to referral for a psychiatric opinion. It is important to insist upon this as acute agitation is usually a manifestation of treatable psychiatric disorder.

THE PARANOID PATIENT

A large proportion of the individuals who, in middle age, believe themselves to be the victim of persecution are, in fact, suffering from serious psychiatric disorder. They have little insight into their condition and cannot often be persuaded of the need for treatment. Their condition comes to light in a variety of ways.

A patient may telephone a medical man other than his regular doctor and ask if he can have a talk with him in conditions of privacy. It is a good thing when consulted in this way to ask how long the matter will take. The answer will usually make it plain that the story is rather involved and the patient will say that he will need half-an-hour of the doctor's time. This is always a gross underestimate. The story, or the patient's version of it, may seem credible enough at first but when he is asked why medical help is necessary, he may reveal that his body is subject to sinister radiations or his mind made uneasy by telepathic brainwashing or other influences the evidence for which lies in hallucinatory experience. To mention mental treatment at an early stage, while one way of bringing the session to a close, will not help the patient and it is better after listening sympathetically to suggest that a psychiatric opinion be used to examine the effects of the persecution on his mind. If the patient is willing to bring his wife, it is easier to make an estimate of the seriousness of the illness. The main dangers are of suicide or of an act of aggression against the supposed persecutors. If certification is indicated in the patient's, or in the public, interest, it is better to get in touch with his family doctor. If the patient is unwilling to come voluntarily into hospital as a refuge from his persecutions, as he often is, arrangements can then be made with the duly authorized officer. Whilst the above type of illness is more frequent, this is not to say that a depressed patient with a

genuine grievance or who has an impossible spouse will not wish to discuss his troubles and be much helped by a sympathetic hearing.

A variation on this theme is the patient who asks to be seen privately and furnished with a certificate that he is of sound mind. He will usually have no difficulty in giving a clear, if incomplete, history and in conversing normally on current events. Except in rare legal circumstances in which the practitioner would not be called upon by the patient to furnish it, a certificate of sanity is of no possible use and the fact that it is asked for must mean that the patient's sanity has been called into question. It should never be given on the basis of the patient's own uncorroborated story and inquiry as to the use to which he intends to put the certificate and as to previous contact with psychiatry will often reveal the nature of his persecutory ideas.

SUICIDAL THREATS AND ATTEMPTS

The idea that a person who talks about suicide is unlikely to make a successful attempt is quite erroneous. Even the dramatic suicidal gesture designed to attract attention or put someone in the wrong is occasionally fatal. The most serious risk is the patient who is deeply depressed but whose movements are not slowed down and who can go through the motions of smiling, making conversation and insisting that all is now well. A blank expression and evidence of an unemotional conviction that nothing can be done for him are the serious danger signs. That any depressed patient must be thought of as a potential suicide is indicated by the 200 successful suicides which occur in the British Isles every week. When an attempt has been made, the first consideration must be to deal with the immediate situation as described by Dr. Lockett in his article on page 457. If admission to hospital is not necessary on account of poisoning or injury, it may still be wise to send the patient to an observation ward or mental hospital in order to treat the state of mind which led to the attempt. In depressives, unsuccessful suicide is often followed by a temporary improvement in the mental state so that this may not appear necessary. If the history or examination of the patient elicits no evidence of psychiatric disorder which would justify immediate psychiatric aid, the opportunity should nevertheless be taken to insist on referral for a psychiatric opinion as, whatever the diagnosis, attempts at suicide tend to recur. If the relatives appear likely to suppress the matter, it is better to insist on admission at the time.

A practitioner may often feel that he is helping the patient and the family by letting the matter drop after an attempt at suicide by an apparently normal adolescent. In psychiatric disorder in students, for instance, a history of a hushed-up attempt at suicide at a much earlier stage of the illness is quite often elicited. In recommending referral to a psychiatrist, the practitioner may have to weigh his duty against his future relations with the family, for even well-educated parents may be loath to face the fact that the attempt may be a sign of psychiatric disorder. Insistence is necessary because the adolescent depressive has a good prognosis if treated in time and a valuable

life may be lost if a further attempt is made. There is usually little point in bringing the police into the matter. In most areas they are very helpful and have no wish to add legal complications to a clinical matter and, if they have already been called in, their subsequent interest may prevent relatives from letting the matter of treatment drop. In other areas their insistence on bringing the case before the magistrates when the patient leaves hospital may only add to his burdens. There are two circumstances, however, in which it may be wise to interest them in the matter. The first is when a patient makes repeated attempts or suicidal 'gestures' with no intention of succeeding in order to upset the family, breaking a promise to go to a specialist on each occasion. The second is the case of the alcoholic who regularly attempts suicide at the end of each bout of drinking but refuses to have anything done about his disability, even if each attempt leads to his spending three days in an observation ward. It is not possible to enforce it upon him legally and he cannot be detained if he is by then of sound mind, but if the police are informed at the outset, he can be taken to court and treatment made a condition of probation.

THE ACTIVELY HOSTILE PATIENT

Excitement with complete unwillingness to cooperate is relatively rare and may be seen in acute mania, in the catatonic excitement of schizophrenia, in the patient who has turned on imagined persecutors, in the unstable psychopath who is smashing the house up, in epileptic furor and in the occasional subject of organic brain disease who has become violent when intoxicated. As soon as an attempt to make contact with and reason with the patient has failed, and there is no prospect of his subsiding safely where he is, consideration will have to be given to getting him under control against his will. Any compromise between trying to elicit the patient's cooperation and at the same time using compulsion is doomed to failure for he can pretend to cooperate and then resist when the practitioner and his helpers are off their guard.

However confident he may feel that he can deal with the matter alone, it is unwise for the practitioner to attempt to remove a patient by force without aid if only because a single person is more apt to damage the patient. The advice of an experienced duly authorized officer is always valuable and to ask his advice by telephone is a good way of securing his early presence and cooperation.

In very violent patients it is advisable not to advance without a force of one man per limb. When this is not available it may be expedient to wet the patient thoroughly first and then entangle him in a wet sheet, a procedure which causes a minimum of trauma. If the patient is fully dressed his coat should be slipped down so as to restrict the movement of his arms and his braces should be undone so that his trousers prevent him from kicking. The less said, the more the patient feels that he has nothing to gain by resistance.

Once he is firmly held, an injection should be given. For this purpose he should be held face downwards on a bed or, better, on a mattress on the floor. For rapid absorption, injection should be in to the gluteal region, if necessary through the

clothes. Morphine, ½ grain (30 mg.), with hyoscine hydrobromide, 1/100 grain (0.6 mg.), is the most useful, but 25 mg. of chlorpromazine is also effective. Paraldehyde, 10 ml. intramuscularly, is very effective in epileptic excitement and in states of confusion but, if the whole 10 ml. is given in one area, it will usually cause severe pain. It should not be given unless reasonable asepsis can be ensured, owing to the frequency of staphylococcal abscesses in patients injected in such circumstances. Hexobarbitone, 10 ml. of a 10 per cent. solution intramuscularly, is a rapidly acting alternative. It will be necessary to wait until the injection has taken effect, when the patient can be wrapped in blankets and taken to the ambulance on a stretcher with straps to prevent him falling out. Some patients may pretend to be quiet in the hope of hurting at least one of their captors and a lull in activity should be regarded with suspicion. Once it has been decided to restrain the patient in this way the party should be restricted to those actually involved, for if the affair is visible to the public, champions of the liberty of the subject may appear from local public houses or the patient may successfully appeal to Irishmen or other minorities to support his cause. In order to save embarrassment of the relatives, it is sometimes wise to keep the patient in the house until narcosis is deep or until night falls.

When the patient's admission to hospital requires two medical certificates, it is essential that the second certifying doctor be brought while the patient is still conscious or he will be without direct evidence of unsoundness of mind. In most cases, however, the patient will be admitted to hospital on an urgency order with one certificate or to an observation ward on an order given by the duly authorized officer. It is wise, when this official requests a note stating that the patient is a danger to himself or to others, to give this as he likes to feel that he has medical support even though the decision, as the law stands is, in fact, his and not that of the practitioner.

Where the state of excitement is likely to be of brief duration, as in recurrent epileptic excitement or *mania à potu*, there may be no need to remove the patient at all after sedation as he will wake up recovered after a long sleep. If he is an epileptic it is essential to ensure that any regular anti-convulsant medication should not be interrupted by the incident. A single dose of 3 grains (200 mg.) of phenobarbitone, in sustained-release form ('spansules'), will guard against this possibility. In healthy subjects psychopathic drunkenness can be brought to an end with an injection of apomorphine hydrochloride, 1/12 to ⅛ grain (5 to 8 mg.) according to weight.

There is one type of patient in whom every effort should be made to persuade him to go to hospital voluntarily, even though this may take a long time and be most exasperating. This is the subject of hypomania or mania who feels alert and well but has little idea of the extent to which his mind is overactive. Mania tends to occur in intelligent and responsible people and its duration is usually brief so that they can return to work without much comment when it is over. The sense of humour of the hypomanic is usually well preserved and the most should be made of this. If force is used he may feel justified in retaliating. If, in the end, he has to be certified it is rarely that he can bring himself to see, when he has recovered, that it was really necessary and he will feel that the practitioner has done him an irreversible damage. Given time, a manic can usually be persuaded to come into hospital but it may take a great deal of time and patience.

THE SOLITARY AGED PATIENT

The conflict between the older and the present generation, or between husband and mother-in-law, is often aggravated by housing conditions so that not infrequently an aged widow who with age has become interfering and difficult has come to live alone, either at her own insistence or as the result of a family row. Visits from relatives may become infrequent and she may be too proud to join an 'over 70' club or agree to receive 'meals on wheels'. As a result, she may be dependent upon children to do her shopping for her and may emerge less and less, brooding and neglecting herself, living on bread and jam until she finally ceases to go and draw her pension and locks herself in because she feels she must guard the possessions which she keeps about her. To the senile decline in her mental powers there may now be added an element of confusion which brings her precarious adaptation to an end. The failure of cerebral metabolism may be due to mineral imbalance, anoxia from cardiac failure, toxæmia from infection in chest or bladder, vitamin or protein deficiency, or latent uræmia, or to a combination of factors, but the clinical picture is usually one of increased suspicion leading to a severance of relations with the outside world, followed by hallucinations at night. Neighbours will hear her moving about by night and may be alarmed by the absence of sounds by day. She may be unwilling to open her door more than a chink and will finally lock herself in, either refusing to answer or making accusations through the door. By this time she is acutely psychotic and her life is in danger.

In spite of her unwashed, bruised and delirious condition, the prognosis with experienced treatment is usually good and removal to hospital is imperative. This should be preferably to a geriatric unit where acute delirium is all in the day's work or to a general hospital psychiatric unit, since rapid improvement often occurs and admission to a mental hospital is not necessary. It is fortunate that the certification of such patients simply as a means of finding accommodation is likely to end with the new Mental Health Act. If negotiations through the door have failed and contact with the landlord or agent has not produced a key, there must be no hesitation in forcing the door

Once this has been done the patient may be willing to come to the ambulance if she is allowed to 'pack her things' but she will usually neither accept help nor leave anything behind. In handling the patient the greatest care must be taken to avoid fractures. Bruising is almost inevitable. Morphine and hyoscine are not safe, for the latter not only intensifies the hallucinations but may bring on renal failure. Paraldehyde is the best drug, 8 ml. intramuscularly being an average dose. Patients of the older generation may be persuaded sometimes to take paraldehyde or chloral with brandy and these may even be accepted without detection as failure of taste and smell is characteristic of senile delirium. A uniformed nurse may be able to persuade the patient to come away when others have failed. If it is evident that the patient will not come, she should be wrapped quickly in blankets with her arms inside and put on a stretcher. Fortunately this brief episode of compulsion is not usually remembered by the patient. Care should be taken lest cats or canaries are left locked in the room when the patient is taken away and thought should also be given to the fact that she may have considerable amounts of cash concealed in the room. Police and duly authorized officers are considerate and experienced in

dealing with these non-medical details which are well left to them. If possible, a few articles should be taken to the hospital with the patient to be put on her bedside locker. These familiar possessions help to mitigate the confusion caused by the change to a completely different environment.

Relatives should be told that recovery and return are quite likely, lest they begin prematurely to divide her property.

If the patient can be seen when she has only reached the stage of nocturnal delirium, removal to hospital may not be necessary and a reorganization of her life may be possible. In a large proportion of such deliria, an injection of vitamin B complex will produce some immediate improvement, but treatment of dehydration and infection must start at once if these are present.

DRUG ADDICTION

Occasionally one of the few morphia or heroin addicts in the country will present himself or herself at the surgery saying that they are away from home and have run out of supplies. If they are to be supplied it is essential first to communicate with the medical practitioner who signed the last prescription in case an attempt is being made to obtain drugs from two or more sources. The addict who is 'on prescription' will give this information at once and offer to pay for the trunk call. On the other hand, the request may lead to the stranger making an excuse to leave at once. He may be a treated addict who has relapsed and who cannot obtain further illicit supplies. If withdrawal symptoms are present and he is feeling desperate, he should be offered treatment and arrangements made for his admission to hospital. If this cannot be arranged at once he should be put to bed and given half the usual dose as stated by him, together with an injection of 25 mg. of chlorpromazine. If this has to be repeated, 25 mg. of chlorpromazine should be given four-hourly by mouth unless the patient has used the drug before, in which case up to 200 mg. daily may be given. Unofficial notification, addressed to the Home Office, Drugs Branch, Whitehall, London, S.W.1, helps this organization in its successful work of controlling addiction.

A more common visitor is the amphetamine addict who may be obtaining both amphetamine and barbiturates from more than one source. Intense fatigue and apprehension due to abstinence, or confused behaviour from the additional effects of the barbiturates, may be found if addiction is advanced. Once addiction has come to light it is essential to institute treatment. Reduction of the dose of amphetamine and barbiturate (over a four-day period) while the patient is given chlorpromazine is quite feasible in the patient's own home if relatives are cooperative. It is quite impossible to carry this out while the patient is ambulant.

DELIRIUM TREMENS

A recent distaste for alcohol, sleeplessness and fear, especially of solitude, are the main features of this condition apart from the delirium itself with its characteristic hallucinations. The mortality from cardiac collapse is high unless it is treated by a skilled team and the patient's distress is usually such that, if admission to a hospital or nursing home is impossible, something

must be done at once. Most alcoholics insist on some form of privileged treatment but fare better if admitted to a public hospital where it is easier to impress upon the patient, in spite of his pathological optimism, the need for subsequent treatment of his alcoholism. It is well also to see that the nursing home fees will not be added to the alcoholic's pile of unpaid bills.

Three drugs have made an immense difference to the course of delirium tremens; aneurine, chlorpromazine and corticotrophin have deprived it of a good deal of its terror. An immediate injection of a large dose of aneurine hydrochloride (100 mg.) with nicotinamide (100 mg.), or of an intravenous multivitamin preparation, may produce immediate improvement. Corticotrophin should only be used under hospital conditions but in the patient's home an initial dose of 10 mg. of prednisolone may be given with a further 5 mg. after eight hours. For relief of distress, chlorpromazine, starting with 25 mg. every three hours, is best but if hypotension is present it may be well to give paraldehyde shaken up in milk in doses of $\frac{1}{4}$ to $\frac{1}{2}$ fluid ounce (7 to 14 ml.) at a time. Since paraldehyde addiction can easily develop in alcoholics, it should be replaced by chlorpromazine as soon as possible. One of the disadvantages of prompt treatment of a first attack of delirium tremens is that the patient may feel so well after even three or four days that he may insist on getting up and returning to work. He is not, in fact, out of physical danger until his prednisolone, reduced by 2.5 mg. daily, is no longer being given or until his sleep rhythm has returned to normal. Treatment in hospital should usually be insisted upon in the first instance.

THE ESCAPED MENTAL HOSPITAL PATIENT

The relatives of a patient who has come home from a mental hospital may ask how to proceed. Whilst the patient may say he has 'escaped' he may in fact be in an 'open door' hospital and may even be a voluntary patient under the Mental Treatment Act, able to leave at his own request. If he is a certified patient and has been away from the hospital for less than fourteen days he can be retaken without a fresh order and certificates by any member of the staff of the hospital from which he has escaped, or by any person whom the physician superintendent authorizes in writing (he may authorize by telephone and confirm in writing). The first thing to do therefore is to telephone the hospital. Patients are apt to come home and say that, having been away from the hospital for fourteen days, or having crossed the border between Scotland and England, they are now free. It is well to be sure that he has been away for fourteen *clear* days as the day of the escape does not count. Further, arrangements can be made for him to be retaken even though he has crossed the border. It is not uncommon for patients whose movements are in no way restrained to ring up their relatives from a telephone booth near the hospital, say that they have 'got away' and ask to be picked up. Relatives should be reminded that in the case of a certified patient, or its equivalent in the Mental Health Act at present before Parliament, they may be committing an offence if they accede to this request.

SURGICAL EMERGENCIES RESULTING FROM INJURY

By P. S. LONDON, M.B.E., M.B., F.R.C.S.
Surgeon, Birmingham Accident Hospital

The consequences of injury fall into two main groups according to their urgency. In the first, life is endangered by:—

(i) Bleeding, with or without the physical signs of established shock.

(ii) Embarrassed respiration due to obstructed airways or to interference with the movements of the chest wall.

In the second group there is often less urgency, or it is not clearly evident that prompt treatment is required to prevent complications. It includes:—

(i) Head injury with unconsciousness
(ii) Wounds and burns
(iii) Fractures
(iv) Spinal injury with paralysis
(v) Abdominal injury

BLEEDING

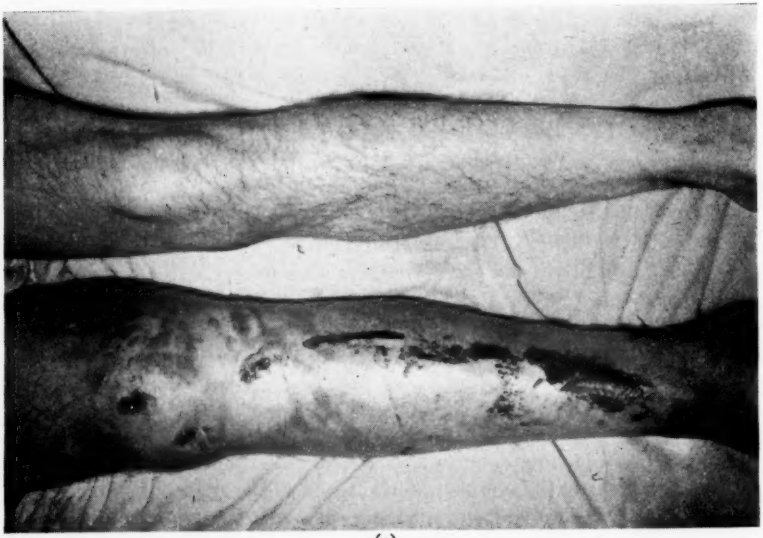
Severe external bleeding is almost always due to a breach in a large vessel. A large artery that has been completely divided rarely bleeds much, but a vein can pour forth a torrent of blood. Most bleeding can be staunched by direct pressure aided by elevation when possible. Pressure is best applied by a pad of cotton-wool, 2 to 3 inches (5 to 7.5 cm.) thick, bound firmly in place with a crêpe bandage. In the case of a limb, the wool should encircle it. A tourniquet is rarely required: the most reliable is a broad rubber bandage, the least dangerous an air-cuff, which requires an attendant to make sure that it stays inflated. Artery forceps are hardly ever needed and, if used, should be applied only to a visible and otherwise uncontrollable source of bleeding; to plunge them hopefully into a welter of blood is to risk turning an arterial injury reparable by resection and suture into one that needs grafting; other structures may suffer as well.

Internal bleeding may occur into the cavities of the head, chest and abdomen but commonly it infiltrates the tissues and tissue-spaces, even when there is an open wound. It is, indeed, the inevitable accompaniment of nearly all injuries but being out of sight is usually out of mind until the well-known clinical signs of shock appear.

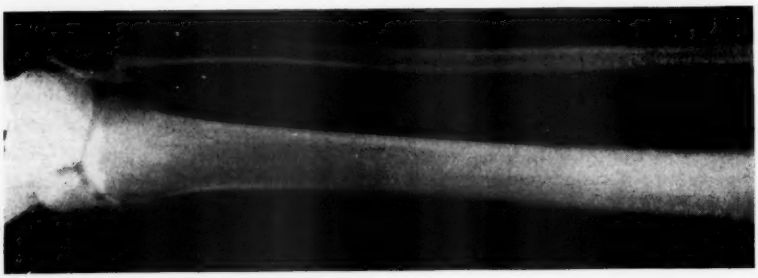
BLEEDING AND SHOCK

Measurements of blood volume have dispelled much of the mystery of 'surgical', and 'wound', 'shock' by revealing the large amount of bleeding that can occur with familiar injuries such as fractures of the femur, tibia,

ankle and pelvis and have re-emphasized the danger of injury to large, vascular organs such as the liver and spleen. With open wounds of the limbs there is a broad relationship between the quantity of injured tissue and the volume of blood lost from the circulation. A mass of *injured* tissue equivalent



(a)



(b)

FIG. 1.—(a) The amount of swelling—over 1 litre (2 pints)—accompanying (b) mild-looking fractures of the fibula with subluxation of the ankle.

to the size of a man's (open or closed) hand represents the loss of about 0.5 litre of blood from circulation. It has also been shown that the amount of swelling accompanying a closed injury of a limb corresponds with the measured loss of blood from circulation (fig. 1).

Shortly after even severe injury, and with measured loss of 30, 40 and even 50 per cent. of the total blood volume (roughly 1.5 to 3 litres [3 to 6

pints] in an adult) the victim can still look quite well, with none of the clinical signs of shock. This 'latent' stage of shock may progress no further but the compensatory mechanisms are strained to the limit and liable suddenly to fail as a result of quite small disturbances such as movement, pain or chilling. The classical picture of severe shock then appears very rapidly. The practical importance of these findings is that the need for resuscitation must be based on the visible blood shed and the observed nature and extent of the injury; it should not be based upon the presence or absence of signs of shock.

Fractures of the pelvis and shaft of the femur commonly, and fractures of the tibia sometimes, require blood transfusion within a few hours. The same applies to open wounds with 'two hands' or more of injured tissue, whether there is a fracture or not. It should be remembered that a combination of several fairly mild injuries may be more serious than one severe one, and a large bruise of the buttock or trunk may contain up to a litre or so of blood.

Treatment.—The basis of the modern treatment of shock is blood transfusion. Ideally this should start in anticipation of shock, before the signs have appeared, and should match the rate and amount of loss. Plasma and its substitutes may be used to maintain the circulation but they cannot carry oxygen and are in consequence only a temporary and inadequate alternative to blood in the treatment of hæmorrhage. To ensure safety, blood should be given only if it has been fully matched by a pathologist or properly trained technician but in an emergency, and if available, group O Rh-negative blood may be given unmatched. Rh-positive blood carries a risk of subsequent transfusion reaction but even this risk may justifiably be taken if the alternative is death from hæmorrhage.

In most cases the badly injured patient should not be taken to the nearest hospital, but to the nearest hospital that is fully equipped so that resuscitation can be started without the delay and disturbance of two journeys. The patient should be wrapped up to prevent chilling but heat should not be applied in any form as it can easily burn ischæmic skin and divert blood to the skin from organs with a greater need for it. Morphine is first and foremost an anodyne and plays little part in the treatment of shock. It is, however, reasonable to give it in preparation for a journey lasting for more than a few minutes or when a patient is seriously injured and resuscitation will necessarily be delayed, as in mining and mountaineering accidents. Large doses of morphine are not required: $\frac{1}{6}$ to $\frac{1}{4}$ grain (10 to 16 mg.) is usually enough when given intravenously or deeply into muscle. The subcutaneous tissue is temptingly easier to inject but in the shocked patient its blood supply is so poor that little or none of the drug is absorbed, further doses may be given, and then, when the peripheral circulation is restored an excessive amount is absorbed. The doctor who gives a large dose of morphine at the roadside, but does not see the subsequent signs of overdosage, continues to believe that shocked patients are resistant to morphine.

INJURIES OF THE CHEST

Injuries of the chest stand high among the causes of death following injury because they are themselves dangerous (fig. 2), because they aggravate shock and because they are commonly accompanied by serious damage to the head, abdomen or pelvis. Fortunately, even at the roadside, much can be done to safeguard life.

Respiratory obstruction.—The tongue, false teeth, vomitus, or bronchial secretions may obstruct the airway of any unconscious patient. Fractures of

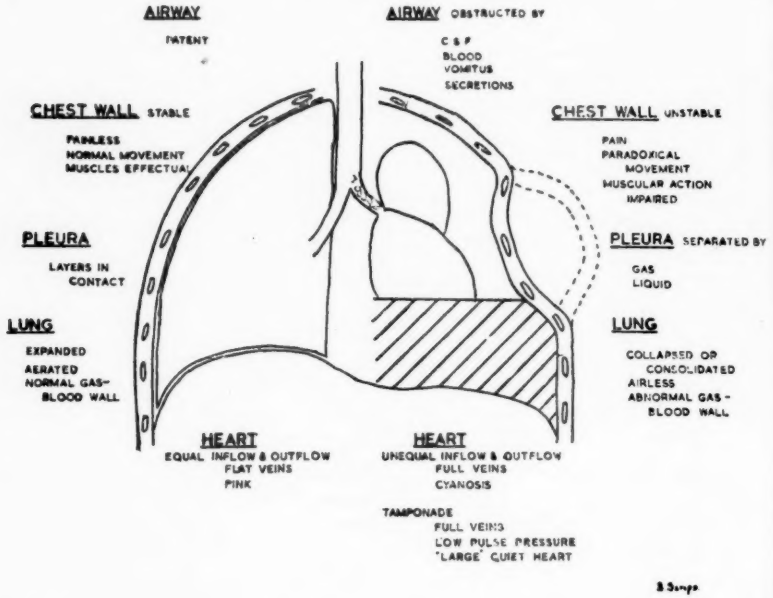


FIG. 2.—Composite diagram illustrating, on the reader's right, the main effects of injury of the chest and, on the left, normal conditions.

the skull and jaws add the hazards of bleeding into the nasopharynx. Frothing and cyanosis mean that obstruction already exists. Whenever possible it must be prevented. When circumstances permit, such patients should be placed nearly prone, or at least with the head low, otherwise tongue forceps, an oral airway or even tracheotomy should be used and any secretions removed by mopping, or suction if available. It is a wise precaution to pass a *large* stomach tube as soon as possible with any unconscious patient.

Mechanical disorders of the chest occur in severe forms after crushing or impact, as in car crashes:—

(a) *Paradoxical respiration* takes place when multiple fractures of ribs remove part of the chest wall from muscular control. Unless slight, the

consequent movement of the unstable area inward during inspiration and outward during expiration is easily seen and felt (fig. 3). Mild paradoxical movement requires no immediate treatment but severe degrees cause marked respiratory distress, sweating and cyanosis. The unstable area must be steadied as much as possible by the pressure of a hand, sand-bag or pad bound firmly over it. If the patient's general condition does not improve considerably, either the controlling pressure is ineffective or there is some other disorder.

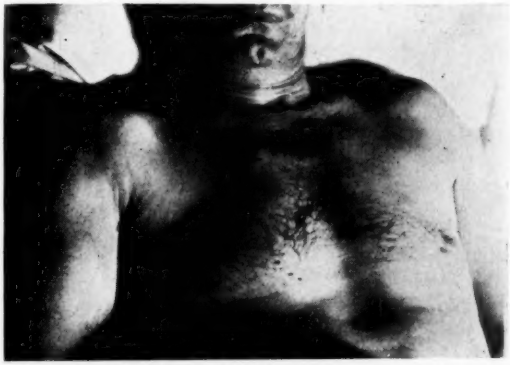


FIG. 3.—Inspiratory recession due to fractures of the 2nd, 3rd, 4th and 5th ribs caused by crushing between railway buffers.

(b) *Pneumothorax* occurs in three dangerous forms for which pleural puncture may be life-saving: (i) tension pneumothorax, (ii) bilateral pneumothorax, (iii) pneumothorax with other disorders of the chest. Pleural puncture also has a place in diagnosis for, except with tension pneumothorax, the physical signs are often equivocal in an injured person. Pneumothorax should be suspected when there is respiratory distress without evidence of obstruction or broken ribs. Open pneumothorax is usually readily recognizable by the sound of air being sucked in or passing in and out of a wound in the chest wall. In either case a pad of tulle gras or moist gauze will plug the hole. Water-sealed drainage should then be provided, especially with sucking wounds that have allowed air into but not out of the pleural space.

(c) *Damage to the lungs* is beyond the scope of the general practitioner and hæmothorax does not usually require urgent drainage. *Hæmopericardium*, on the other hand, can bring on the grave consequences of cardiac tamponade. The presence of distended veins, muffled heart sounds and a low pulse pressure after injury of the chest calls for aspiration of the pericardium by passing a needle upwards and backwards through the costoxiphoid notch. Aspiration may have to be repeated, even while the patient is being transferred. Other circumstances permitting, these injuries are better managed with the patient propped up.

HEAD INJURY WITH UNCONSCIOUSNESS

The most urgent complication is respiratory obstruction, the most dreaded, an enlarging clot within the skull. Anoxia is one of the causes of restlessness

in an unconscious person and relief of respiratory obstruction often induces tranquillity and may improve consciousness. The cardinal feature of an enlarging clot is a fall in the level of consciousness and, whether a victim of head injury has been unconscious or not, the onset of drowsiness is serious. Clots also accumulate in those who have remained unconscious since injury. The distinction between remediable clot and irremediable damage to the brain should not be attempted on clinical grounds but the patient be transferred without delay. The receiving hospital should be given as much warning as possible, as lives have been saved because the patients were moved straight to a prepared operating theatre. The main danger during transfer is respiratory failure and it is therefore a wise precaution for the patient to be accompanied by someone who can keep the airway clear and provide artificial respiration if necessary. The mouth-to-mouth method is applicable in an ambulance and provided that oxygenation be maintained the heart may go on beating for several hours.

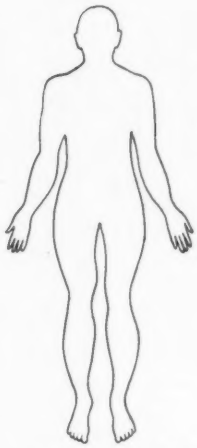


FIG. 4.—The areas of the various parts of the adult body. The palmar surface of the outstretched hand and fingers provide 1 per cent. of the whole. In children, the head is proportionately larger than in adults.

The combination of shock with unconsciousness requires mention. Head injury alone rarely causes shock and if this be present another injury, masked by the unconscious state, should be sought. On the other hand, unconsciousness can result from cerebral anoxia following severe hæmorrhage, and signs of injury of the head, though present, be irrelevant. In practice therefore, there need be no hesitation over transfusing a shocked person because of coexistent unconsciousness: both conditions may benefit.

WOUNDS AND BURNS

Any breach of the skin provides entry for bacteria and should be sealed without delay. Obvious foreign material should be removed if possible and distorted flaps of skin gently laid back in place. Otherwise, the wound should be disturbed as little as possible and, with burns, burnt clothing should be left in place unless it is easily removable. A clean, dry dressing is better than none at all and a sterile one is better still. An injection of penicillin may be given but there is no need to apply any antiseptic or antibacterial substance to the wound itself. Indeed, it has been shown that attempts to protect a

wound in this way can increase the degree of bacterial contamination.

Burns and scalds affecting more than 10 per cent. of a child's or 15 per cent. of an adult's body (fig. 4) cause enough shock to require resuscitation. Intravenous infusion of plasma or dextran should be started unless the patient can reach (preferably) a burns unit within two or three hours of being burned. Morphine and small quantities to drink may be given. Chemical burns of the skin or eyes should be irrigated copiously with water from a tap before being covered.

Penetrating wounds.—These should be regarded with profound suspicion and neither the patient's estimate nor a probe can be relied upon to establish the depth of penetration. The only certain and safe way of excluding perforated bowel, nicked or severed vessels, nerves or tendons, or retained foreign bodies is full surgical exploration of the wound.

FRACTURES AND DISLOCATIONS

Generally speaking, fractures constitute emergencies when they are associated with: (i) large wounds, (ii) severe bleeding, whether internal or external, (iii) damage to important organs, nerves or vessels, (iv) advanced age and infirmity. Bleeding into the tissues around a fractured femur or pelvis may amount to 2 or 3 litres (4 to 6 pints) and several mild fractures can be just as dangerous as one severe one. Fractures of the lower ribs carry the risk of profuse hæmorrhage from liver, spleen or kidney.

Important nerves and vessels are most often injured at the elbow; rarer causes include fractures of the femur, pelvis and clavicle and fracture or dislocation at the knee. Lesions of nerve or plexus may be partial or complete and can usually wait till the patient reaches hospital but the cyanosed, and more so the white, extremity requires immediate attention. Cautious attempts to correct deformity are facilitated by an intravenous injection of morphine or pethidine and may improve the circulation. Some injuries of the elbow, forearm, knee and leg impair the blood supply of muscles without affecting the pulses or the colour of the skin beyond. It is important therefore to palpate the muscles distal to the injury and to test passive movements of the fingers or ankle. Woody, tender muscles and severe pain on movement are danger signs.

Even mild fractures of the ribs can be dangerous in the elderly and others liable to disease of the lungs. Such patients should be sent to hospital, where the lungs can be kept clear by supervised breathing exercises after pain has been relieved.

Most fractures do not need formal splintage; for the upper limb a sling is enough; the lower limb may be bound to its fellow.

SPINAL INJURIES

Provided the patient is already comfortable it makes no difference to the injury whether he lie prone or supine, but the supine position is the more convenient. If the patient has to be disturbed the spine must move as one

piece: this is most easily achieved by careful rolling. The patient should not be lifted until his whole body can be supported by many hands or a tautly stretched sheet. These precautions may be impossible when a patient is entangled in wreckage. Whatever his injuries, if he is severely shocked he must be extricated as soon as possible. Otherwise it is reasonable to spend a little time clearing obstruction so that the patient can be removed with the least risk of further injury.

Deformities of the neck should not be corrected but supported with pillows or sandbags. If the spinal cord has been injured bony areas of pressure should be well padded and care taken to ensure that the patient does not lie on hard objects such as bunches of keys.

ABDOMINAL INJURIES

No puncture wound over the belly, buttocks or perineum can be dismissed as trivial unless it has been thoroughly examined and this may mean full-scale surgical exploration. It is likely that more people have suffered from failure to explore such wounds than from exploration in which no abnormality was found.

Closed abdominal injuries are notoriously difficult to diagnose. The viscera can be severely damaged without any known injury of the belly and without *any physical signs whatsoever* at the beginning. If the history of the injury or the clinical condition raises any suspicion that the abdomen may have suffered violence the patient must be urged to go to hospital at once lest the signs of internal injury develop suddenly and deterioration occur rapidly at home. The diagnostic difficulties are increased by the presence of other injuries and especially by unconsciousness, but shock that follows an accident without evident explanation is not uncommonly due to internal bleeding.

CONCLUSIONS

Emergencies following injuries are of two types. The first consists of those in which the need to provide prompt treatment is clearly evident and the treatment required is well known, though perhaps not available to the general practitioner in his bag, his surgery or his local hospital. Such treatment as can usefully be provided without delaying the patient's transfer to better facilities should be carried out, but it must be stressed that as a general rule the badly injured patient is best moved straight to a fully equipped hospital without more than life-saving preliminary measures, namely:—

Stop serious bleeding
Keep the airway clear
Control paradoxical respiration
Cover wounds

In the second type of emergency the exact nature or severity of the injury is not at first evident but prompt treatment is essential if grave consequences are to be avoided. This type includes penetrating wounds, closed abdominal injuries, some fractures, and falling level of consciousness.

ACUTE HÆMORRHAGE AND BLOOD TRANSFUSION EMERGENCIES

By A. G. R. LOWDON, O.B.E., M.B., F.R.C.S.Ed.
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Abnormal bleeding of any kind readily frightens a patient and his or her relatives and the doctor may be called urgently to deal with anything from a small epistaxis to a sudden and really exsanguinating gastric hæmorrhage. Some bleedings are unimportant except for their high nuisance value to both patient and doctor, whilst others call for prompt action to save life. It is usually only by going promptly to see for himself that the practitioner can be sure that he does not overlook the serious case.

It is proposed first to consider some of the more common forms of acute bleeding which may require attention and then to consider briefly the question of the use of blood transfusion in the patient's home.

HÆMORRHAGE ASSOCIATED WITH PREGNANCY AND PARTURITION

Any abnormal bleeding during pregnancy is an emergency, even when the quantity of blood lost is not great. Bleeding before the 28th week of pregnancy may indicate abortion, or threatened abortion, and it is sometimes profuse enough to produce a state of severe hæmorrhagic shock. This subject has been dealt with fully in *The Practitioner* by Stallworthy (1951). Hæmorrhage occurring before or after labour is more commonly serious in character. This circumstance is probably the only fairly common indication for blood transfusion in the home, and fortunately most general practitioners in this country are able to obtain the help of the Obstetric Emergency Service. The management of such emergencies has been described in *The Practitioner* by Harvey Evers (1952).

HÆMORRHAGE RESULTING FROM TRAUMA

Severe hæmorrhage, sometimes difficult to control and dangerous in amount, may result from various kinds of injury both in the street and in the home. External bleeding following injury presents no problem in diagnosis. Every possible effort should be made to control such bleeding by local dressings and pressure. A tourniquet is used only as a last resort, and when it has to be used all possible precautions must be taken to see that it is removed again soon and before the vitality of the limb is endangered. Internal bleeding may present more difficulty in diagnosis. In cases of severe injury of the head, thorax, or abdomen, the patient is likely to be sent to hospital in any case; but it must be remembered that an extradural hæmorrhage may follow a relatively minor head injury, that a massive hæmothorax may result from a single blow on the chest, or that an injury over the lower ribs or upper abdomen may cause rupture of the spleen or more rarely the liver. The spleen

can in fact be ruptured by minimal trauma, especially if it is moderately enlarged as by previous disease. Rarely it undergoes spontaneous rupture. In any case rupture is likely to be followed by exsanguinating hæmorrhage requiring urgent transfer to hospital for transfusion and operation. The risk of 'delayed rupture' of the spleen must be remembered. In these cases a subcapsular hæmatoma results from the injury and is followed by profuse blood loss into the peritoneal cavity occurring a week or ten days after the injury.

HÆMATEMESIS AND MELÆNA

The more common sources of bleeding from the alimentary tract are in the stomach or duodenum. Such bleeding is usually manifested by hæmatemesis; if the blood is red the patient will be frightened and likely to exaggerate the amount. If vomiting is delayed the colour of the blood may be altered to 'coffee ground' appearance, and the volume of blood is then even more difficult to estimate. Melæna will always follow and may occur without hæmatemesis. Since less than five ounces (140 ml.) of blood is enough to produce a tarry stool for several days the appearance of the stool is little help in estimating the amount of blood lost or in judging whether or not bleeding has stopped. Occasionally in the early stages of a severe duodenal hæmorrhage the patient passes a stool containing blood which is still quite red, and this indicates a fairly large blood loss.

The only reliable guide to the severity of the blood loss in such cases is the general condition of the patient. A raised pulse rate or a low blood pressure persisting after the initial reaction indicates a significant fall in blood volume. The practitioner should also look at his patient closely for signs of marked peripheral vasoconstriction—as is perhaps best shown by pallid and slightly cyanotic fingers and nail beds. It is important to remember that for a time a serious loss of blood volume may be masked by very efficient vasoconstriction and in these cases a normal blood pressure reading will be misleading. Even more commonly, difficulty in interpreting the blood pressure record arises in a patient who is normally hypertensive; in such a patient a 'normal' figure may reflect severe depletion of blood volume.

The commonest source of gastro-duodenal bleeding is peptic ulcer and the patient is often known to have a chronic lesion of this kind. When such a cause is not evident other possible sources have to be considered. Bleeding may be due to multiple gastric erosions, gastric carcinoma or, more rarely, simple tumour, varices related to portal hypertension, and other lesions. Melæna alone may come from the stomach or the duodenum; more rarely the source is in the intestines. Lesions in the small intestine, such as an ulcerated simple tumour or a peptic ulcer in a Meckel's diverticulum, can give rise to serious bleeding. Bleeding lesions in the colon and rectum are more common, notably carcinoma, diverticulitis, and ulcerative colitis. Only rarely is bleeding from hæmorrhoids profuse enough to cause anxiety.

In the management of patients with hæmatemesis bed rest must be en-

forced and morphine or other sedative be given. In patients in whom the bleeding is not promptly manifested by vomiting the diagnosis and similar lines of treatment may be indicated by a state of collapse indicating hæmorrhagic shock. Smaller bleedings may only become apparent later when melæna occurs in a patient who has felt vaguely unwell. The urgency to send the patient to hospital will usually depend upon the severity of the hæmorrhage and this, as has been said, must be judged from the patient's general condition. When the blood loss is slight, and when the patient's general condition when first seen indicates that active bleeding has already stopped, the practitioner may be justified in treating the episode at home; investigation in hospital will usually be required later. In most cases the patient will be transferred to hospital after morphine has been given. In a very few, and in special circumstances, blood transfusion in the home before transfer to hospital may be advisable.

HÆMOPTYSIS

Although hæmoptysis is now only rarely severe enough to be dangerous it is very alarming to the patient and for this reason at least calls for urgent treatment. The common causes are pulmonary tuberculosis, bronchiectasis, and bronchial carcinoma. Whilst the last named is becoming more common the severe hæmorrhages which used to be seen in tuberculosis and bronchiectasis are now fortunately rare.

In cases of hæmoptysis there is nothing immediate that the doctor can do to arrest the bleeding except to try to quieten the patient mentally and physically. If morphine is used it should be given in doses which will not depress the cough reflex. The patient should be propped up in bed so that coughing and expectoration are facilitated with minimal exertion. Confident reassurance by the doctor is valuable. No drugs are likely to help stop the bleeding, but some placebo therapy may be indicated to satisfy the patient and the relatives.

EPISTAXIS

This form of bleeding is only rarely dangerous, but is commonly troublesome. Two different sources of bleeding within the nose must be distinguished. In younger patients the bleeding occurs from the veins in Little's area on the anterior part of the nasal septum, and usually stops spontaneously. In this case the bleeding point is readily accessible—though sometimes only after blood clot has been cleared out of the nostril. If necessary, bleeding can be controlled by gentle pressure on the area with a moist pledget of cotton-wool, or with a piece of fibrin foam or other preparation with hæmostatic qualities. The usual practice has been to pack the anterior nostril with ribbon gauze, but this is rarely necessary.

In elderly patients bleeding comes from arteriosclerotic vessels farther back in the nose. This type of bleeding is sometimes associated with hypertension and in limited amount is not a bad thing. It is, however, more difficult to control and it may sometimes continue to the extent of dangerous blood loss. Packing the nostril by the usual techniques is unlikely to control

this type of epistaxis. The first essential is to calm the patient and the relatives and to make the patient rest quietly in a sitting-up position. The practitioner may feel that a light pack in the nostril is needed as a gesture. Bleeding may cease after a time but the patient should be warned that there may be small recurrences in the next day or two. If bleeding continues to a serious extent in spite of rest and sedation the patient is best treated in hospital where blood replacement can be given. Some specialists then employ a post-nasal pack.

BLEEDING FROM A TOOTH SOCKET

Bleeding from the socket of a recently extracted tooth may be troublesome in a healthy patient and intractable when a bleeding diathesis complicates the situation. The old and ineffective clot in the socket should be thoroughly cleaned out and a light pack inserted. A small piece of fibrin foam may be inserted first and held in position by a pledget of gauze. If bleeding is not easily arrested further pressure should be applied by pressing the sides of the cavity together rather than by inserting more pack. In the worst cases it may be found necessary to insert a suture to approximate the sides of the socket. If, however, it is known, or if it is now suspected, that there is a bleeding diathesis the patient should be sent to hospital for treatment.

BLEEDING FROM VARICOSE VEINS

Minor trauma to a superficial varicosity in the leg can start profuse bleeding. If the patient panics and runs about looking for help serious blood loss may result. The bleeding is, of course, very easily controlled by elevating the leg and applying a dressing with light pressure over the bleeding point.

BLEEDING DIATHESES

Abnormal bleeding may be the result of some form of hæmorrhagic diathesis. When bleeding of a severity otherwise unexplained occurs, or when bleeding from an accessible source is not arrested by ordinary methods of treatment, this must be considered. Among the commoner types of bleeding diathesis are primary or secondary thrombocytopenia, those associated with diseases of the blood such as leukæmia or aplastic anæmia, scurvy, prothrombin deficiency in jaundice or liver failure, and hæmophilia. Various forms of treatment are applicable according to the underlying cause but the immediate treatment in all severe cases will be blood transfusion. There are no indications for special or specific local applications other than the usual hæmostatic ones.

EMERGENCY BLOOD TRANSFUSION

Blood transfusion is only rarely required in the patient's home, but it may be that we have been too ready to accept the view that this service is a hospital monopoly. Some exsanguinated patients might travel more safely to hospital if their depleted blood volume were first partly restored. Even when blood is not available one or two bottles of plasma substitute would be beneficial in selected cases. The value of giving blood at the time and in the

home has been recognized in the obstetric services where the 'Flying Squads' provide the service with hospital-based staff and equipment. None the less any doctor may some day be faced with a circumstance in which only restoration of blood volume will save a life, and if the doctor works far from hospital services, or on board ship, this is more likely to happen.

We must first recognize that the choice of suitable and compatible blood is now a complicated matter and a job for a specialist. Whenever possible, blood from a blood bank should be used and the recipient's blood should be fully typed and crossmatched against the donor blood. Typing will include tests for the rhesus factor. In these times it is not justifiable to give Rh-positive blood to a Rh-negative recipient unless it is needed to save life and no other blood can be obtained in time. This is, of course, particularly important in women of childbearing age, and in those who have had previous transfusions. At the same time Rh-negative blood is precious and should not be used unless it is proved necessary.

But when transfusion is necessary to save life and there is neither time nor facilities for full typing and crossmatching of blood certain risks must be taken. It is then permissible to use group O blood (universal donor); even then, if time permits, it is desirable to make a direct cross-matching test between the cells of the blood to be infused and the serum of the recipient. A direct cross-matching test must be done if a volunteer donor is going to give blood on the spot. The recipient's serum can be obtained by sealing blood from a skin prick in a glass capillary tube; the tube can be centrifuged by swinging it round with a weight at the end of a string. A drop of serum from the capillary tube is mixed on a piece of glass or a white dish with a drop of diluted blood from the bottle or the possible donor. The donor cells should be diluted by mixing a drop of blood with a few drops of saline or other isotonic solution. The bloods are considered compatible if no agglutination is seen after fifteen minutes' observation with rocking; this can be judged with the naked eye.

If blood has been obtained from a blood bank the usual sterilized 'giving set' will have been provided with the bottle. If the circumstances make it necessary to withdraw the blood from a donor at the time, sterilized vessels, tubing, and needles, must be found. The blood on withdrawal must mix immediately with an anticoagulant; 50 ml. of 3.8 per cent. sodium citrate solution is usually used for this, but a small quantity of heparin will serve. The dose of heparin should be very small (about 1000 units) so that a systemic effect is not produced in the recipient. Alternatively the blood may be transferred direct from the vein of the donor to the vein of the recipient. To do this a two-way syringe or a roller-pump is required. Precautions must be taken to prevent clotting in the tube and syringe system. The donor may be heparinized or the syringe and tubing treated with paraffin.

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IATROGENIC EMERGENCIES

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'ιατρος: a surgeon, leech or physician. (Liddle and Scott)

THE term 'iatrogenic' is a neologism which has apparently come to stay. It has been attributed to the late Sir Arthur Hurst who originally applied it to disorders induced in the patient by autosuggestion based on the physician's examination, manner or discussion. Its meaning has been extended to include any untoward incident resulting from medical or surgical treatment. Presumably errors of omission are excluded!

Hazards of therapy have been present since the earliest days of medical practice and many have been due to ignorance but in spite of the great advances of medical science each new procedure or new drug seems to carry with it potential dangers. It therefore behoves every medical practitioner constantly to be on the alert for unexpected mishaps. Some may be due to lack of skill, some to lack of knowledge whilst others appear to be unavoidable. It is therefore important to be acquainted with the possible risks of each new or unfamiliar drug or procedure and to have at hand the means to counteract any emergencies which may arise. If risks can be anticipated it may be wise, in view of possible medico-legal repercussions, to warn the patient in advance. On the other hand, it is equally unwise to strike terror into the heart of a patient when risks are minimal.

Incidents which may arise in the course of surgical operations, obstetrics, anæsthetics and poisoning from overdosage, as well as iatrogenic diseases developing gradually—and they are many—are outside the scope of this article. The conditions dealt with include some of those which are likely to be encountered in general practice or by the house officer in the general wards of a hospital.

DIAGNOSTIC PROCEDURES

Lumbar puncture.—Apart from the risk of sepsis from inadequate skin preparation or sterilization and the breakage of the needle in an uncontrolled patient (which, if anticipated, may be dealt with by adequate sedation), there are two major hazards: (1) Inserting the needle too far, thus penetrating and injuring an intervertebral disc or perforating a vein of the internal vertebral plexus, causing intrathecal hæmorrhage, which, however, is rarely severe. (2) Performing a lumbar puncture when the intracranial pressure is raised as a result of a cerebral abscess or tumour (usually subtentorial), causing herniation of the medulla into the foramen magnum. The signs of this condition are cessation of the flow of cerebrospinal fluid and pain in

the neck followed by respiratory depression which may proceed to coma and death very rapidly or in a few hours. This can be avoided by never performing lumbar puncture without first examining the fundi for the presence of papillœdema and, in cases of doubt, only removing small quantities of fluid. The immediate treatment is to withdraw the needle, raise the foot of the bed and inject nikethamide, 2 ml., intravenously. This should be followed as soon as possible by the intravenous injection of up to 500 ml. of 50 per cent. sucrose. If this is not available 30 ml. of 30 per cent. saline might be tried but its duration of action is shorter.

Sternal marrow biopsy.—Before performing this an appropriate sedative should be given: e.g. 'nepenthe', 30 minims (2 ml.). The major risks are penetration of the mediastinum and severe bleeding in a patient already suffering from a severe blood dyscrasia. In infancy and childhood the sternal marrow cavity is imperfectly developed. Marrow specimens should therefore be obtained from the iliac crest.

Biopsy of liver, spleen or kidney.—These procedures should not entail any major risks in the hands of experts provided a careful technique is followed. Small though the risk, it is wise to have the blood group of the patient beforehand.

Bronchoscopy, gastroscopy.—These are not without dangers in certain cases but are only likely to be performed by experienced operators who should be aware of them and their management.

Bronchography.—If iodized oil is used there is a slight risk of iodism but the symptoms are unlikely to be immediate. If idiosyncrasy is suspected, a small dose of Lugol's iodine (5 minims [0.3 ml.]) twenty-four hours before the investigation will provoke coryza in a sensitive individual. A cocaine sensitivity test, if this drug is likely to be used, is much more important. If the crico-thyroid route is employed the needle may slip out of the trachea. Perilaryngeal injection may cause considerable discomfort but is not necessarily dangerous. Any evidence of serious laryngeal obstruction associated with this procedure may require tracheotomy.

Pleural shock.—This may occur without warning at the start of paracentesis or during the induction of artificial pneumothorax. It is less likely to happen if the pleura is carefully anæsthetized and sufficient time is allowed for the local anæsthetic to take effect before the main puncture is made. If it occurs, an injection of adrenaline should be given in addition to the routine measures for shock.

Paracentesis abdominis.—Puncture may be made in either flank or in the midline 1 to 3 inches (2.5 to 7.5 cm.) below the umbilicus. If the latter site is chosen, particular care must be taken to see that the bladder is empty. Collapse may sometimes follow this procedure but is unlikely if a small trocar and cannula are used and the rate of flow is not too rapid. An abdominal binder tightened at intervals is helpful.

BROKEN NEEDLES

This is an ever-present risk every time a needle is used. It may be due to an obstreperous patient, a faulty needle, or careless technique. It is most likely to occur and cause trouble in the case of intramuscular injections and when it does happen the break usually occurs at the junction of the needle with the butt. The following rules must be followed:—

(1) Make sure that the patient knows what is going to be done or else that he is properly controlled. This is particularly important in children.

(2) Always use a needle sufficiently long for the purpose and leave half-an-inch (1.25 cm.) projecting from the skin.

(3) Do not use old needles which are likely to be rusty internally.

(4) If a needle is broken, unless the end is easily palpable, an adequate incision is essential for its removal and an x-ray is usually desirable.

(5) As a rule the patient or relative should be informed of what has happened without admitting negligence. All parts of the needle should be kept carefully and the circumstances reported to one's medical defence society.

(6) A small portion of needle may sometimes be left *in situ* without causing permanent harm, especially in seriously ill patients or those unlikely to recover.

INTRAVENOUS INFUSIONS

There are three main dangers. Only the last mentioned occurs with any frequency.

Penetration of an artery instead of a vein.—This is a rare accident but may occur in a cubital fossa well padded with fat or when an aberrant artery is present and its pulsation has been obliterated by a tight tourniquet. The accident may be suspected if bright red blood flows back into the syringe before the injection is started or if there is immediate pain extending down to the hand. Later, arterial thrombosis, œdema and gangrene may develop. If, unfortunately, the injection is completed heparin should be given intravenously and morphine will probably be required for pain.

Intravenous injection of air.—Although undesirable, the small amount of air accidentally injected with a syringe improperly filled is unlikely to cause untoward effects. Larger quantities which might enter a vein during transfusions, especially if under pressure, may cause serious results for which only symptomatic treatment can be given. In these circumstances the patient should be turned and kept on his left side and artificial respiration continued for as long as necessary. It may be desirable to aspirate frothy blood from a distended right external jugular vein with a wide-bore needle.

Extravascular injection or leakage.—Many drugs commonly given by intravenous injection are highly irritant when injected into the subcutaneous tissues. These include: sulphonamides, iron, aminophylline, iodoxyl, arsenical preparations (neoarsphenamine). This accident may occur if the needle penetrates both the anterior and posterior walls of the vein or if it slips out after insertion. Special consideration should always be given to whether some other method of administration or some other drug could be used if the veins are obviously poor and difficult to find.

There is usually some immediate local swelling and pain before the injection has been completed. In every case of doubt the injection should be abandoned. If the leakage has been minimal the application of a kaolin poultice to relieve discomfort may be all that is necessary; in more severe instances the area should be infiltrated with hyaluronidase and the arm immobilized in a sling. In the case of iodoxyl a subsequent x-ray should be taken of the area to indicate the extent of the extravasation. This might be of subsequent medico-legal importance. When dark solutions such as 'ferrivenin' are being given a glass connexion between the needle and the syringe may be helpful in ascertaining that the vein has been entered correctly and that blood can be freely withdrawn before injecting the fluid.

LOCAL ANÆSTHESIA

A number of emergencies may arise during the course of local anæsthesia. These may be due to: sensitivity to the drug, faulty labelling of the drug or error in its strength, accidental intravenous injection.

There are a number of local anæsthetics available for injection. The only safe procedure is to use one with which the operator is familiar and of which he knows the safe dose. The bottle should always be checked personally before the solution is drawn into the syringe. Injection of adrenaline, the strength of which has also been checked, should always be at hand, even though many preparations are already mixed with adrenaline ready for use: e.g. procaine and adrenaline injection B.P. (adrenaline 1 in 50,000), lignocaine and adrenaline injection B.P. (adrenaline 1 in 80,000).

Cocaine should never be injected and its use should be limited to local application for surface anæsthesia of the eyes, nose and throat. Urethral instillation and applications to broken surfaces are particularly dangerous. Sensitivity to cocaine is not uncommon so that a preliminary sensitivity test may be desirable. Strips of cotton-wool soaked in 1 ml. of a 10 per cent. solution of cocaine hydrochloride mixed with an equal quantity of adrenaline (1 in 1000), making a 5 per cent. strength, are adequate for most intranasal purposes.

The immediate symptoms of sensitivity or overdosage are pallor, tachycardia, sweating and collapse. If not severe, a quick-acting barbiturate may be given by mouth, e.g. quinalbarbitone, pentobarbitone or amylobarbitone. In more severe cases the end of the bed or couch should be raised, injections of nikethamide or leptazol given, together with oxygen and CO_2 and, if necessary, artificial respiration. If convulsions occur a small dose of thiopentone, 3 to 5 ml. of 5 per cent. solution, should be given slowly intravenously. As a prophylactic it is always a wise move to give one of the above-mentioned barbiturates one hour before the local anæsthetic is used.

ANAPHYLAXIS AND ALLERGIC REACTIONS

The danger of anaphylaxis was a serious problem when various horse sera

were in common use. When diphtheria was prevalent and scarlatina antitoxin was freely used a considerable percentage of the juvenile population was rendered sensitive to horse serum. Many of those individuals are now in the older age-groups. The only serum now used at all commonly is tetanus antitoxin and the possibility of sensitivity must always be considered when this or any other serum is administered either prophylactically or therapeutically.

Anaphylactic shock appears within a few seconds or minutes of the injection. Serum sickness is less alarming and consists of rashes, pyrexia and joint pains appearing about ten days after the injection of serum. Certain precautions should always be taken therefore before any serum is administered. First, an inquiry should be made about the possibility of previous injections and also about any allergic tendencies such as urticaria and asthma. Secondly, serum should never be given unless an injection of adrenaline is at hand.

If a serum reaction occurs an immediate subcutaneous injection of up to 1 ml. of adrenaline (1 in 1000) should be given. This may be followed by a quick-acting antihistamine which may be given orally or intravenously according to the severity of the case: e.g. diphenhydramine hydrochloride, 10 mg. intravenously. Intravenous hydrocortisone, 100 mg. in 500 ml. of normal saline, may also be necessary.

Any patient who is known to have had serum, who is subject to asthma, or in whom sensitivity is suspected should be tested before the full dose is given.

0.2 ml. of a 1 in 10 dilution of the serum is given subcutaneously followed by 0.2 ml. of undiluted serum in thirty minutes if there is no reaction. If sensitivity is demonstrated the initial dose should be doubled every fifteen minutes until the total has been given.

Even in cases in which sensitivity is not suspected it is wise to give 0.2 ml. by intramuscular injection followed by the main dose after thirty minutes.

It is important to remember the possibility and value of previous immunization with tetanus toxoid in individuals who are known to suffer from asthma or to be generally allergic. Such immunization would render prophylactic antitetanic serum unnecessary.

After two preliminary injections at an interval of six months, boosting doses every five years are advisable. It is most important that the individual should be fully informed of the implications and given a record card of the details, which he can carry with him.

PENICILLIN SENSITIVITY

It has been stated that penicillin has now replaced serum as the commonest cause of anaphylactic shock. In addition to skin eruptions and delayed reactions, severe, dangerous and even fatal symptoms including angioneurotic œdema, œdema of the glottis, severe asthma and general anaphylactic shock have been recorded and may follow oral administration as well as

injection. Sensitivity tests are of doubtful value and even in suspected cases a previous minor reaction is not necessarily a bar to the future use of the drug. If collapse occurs the same treatment as that described for anaphylaxis should be given: adrenaline, a quick-acting barbiturate, followed if necessary by cortisone. If available, penicillinase, one million units in 2 ml. of sterile water, may be given by intramuscular injection and repeated in twenty-four hours.

SOME HAZARDS OF INTRAVENOUS DRUG THERAPY

Procainamide.—This drug has a depressing action on the myocardium and is used in the treatment of paroxysmal ventricular tachycardia in oral doses of 0.5 to 1 g. every four hours as required. In emergency and in serious cases which fail to respond to oral therapy it may be given intravenously but is then not without risk, especially in cases of coronary disease and heartblock. In any event it should not be injected at rates exceeding 50 mg. a minute, well diluted with saline. Intramuscular injection is safer. It is unwise to use this drug without electrocardiographic control.

Intravenous iron.—Preparations of saccharated iron oxide are often given by intravenous injection. As previously mentioned they are very irritant if injected into the subcutaneous tissues, causing local phlebitis, abscesses and, subsequently, stiff elbows. Being dark in colour it is not always easy to be certain that the needle is accurately placed in the vein. In addition to this hazard, toxic effects such as dizziness, nausea and vomiting may occur. It follows therefore that this form of therapy should only be employed in patients who have at least two easily seen or palpable veins. The intramuscular injection of iron-dextran complex is safer and easier.

Intravenous mercurial diuretics.—Intramuscular injection is the method of choice. Subcutaneous injection is dangerous and may cause a slough at the site of injection. On rare occasions sudden death has occurred following intravenous injection in individuals who have shown no previous sensitivity. These drugs should rarely, if ever, be given intravenously. If this is essential, the injection must be given very slowly and well diluted with normal saline. 'Neptal' must never be given intravenously. Collapse might be treated with intramuscular or intravenous nikethamide. The subsequent intramuscular injection of dimercaprol, 3 to 5 mg. per kg. of body weight, might be considered.

Injection treatment of varicose veins.—Occasionally, following injections with quinine and urethane, and more rarely after sodium morrhuate, vasovagal attacks characterized by fainting and collapse may occur. The treatment is to lower the head and to give nikethamide or adrenaline.

OVERDOSAGE WITH ANTICOAGULANT DRUGS

All anticoagulant drugs carry the risk that overdosage or undue sensitivity may cause hæmorrhage, especially into the skin or from mucous membranes,

and give rise to hæmaturia, hæmatemesis or melæna. Regular laboratory control is therefore essential if they are to be used with safety.

Heparin.—A single dose of heparin up to 10,000 units is probably without any risk but if repeated administration is necessary the coagulation time should be checked. Overdosage is treated by the slow intravenous injection of protamine sulphate, 1 per cent., 5 ml. in ten minutes. Not more than 50 mg. of protamine sulphate should be given at any one time. (1 mg. of protamine sulphate neutralizes 100 units of heparin.)

Oral anticoagulants (*phenindione, dicoumarol and its derivatives*).—Regular estimations of the prothrombin level are essential. In the event of hæmorrhagic symptoms the drug should be stopped immediately and vitamin K_1 given in doses of 10 to 50 mg. intravenously, or by mouth if the symptoms are minimal. (N.B. Acetomenaphthone is ineffective.) In very severe cases and also in gross heparin overdosage, blood transfusion may be required.

EMERGENCIES ASSOCIATED WITH THE USE OF CORTISONE

It is important to remember that the sudden withdrawal of cortisone, prednisone, and comparable steroids from patients who have been treated for a considerable period may lead to acute adrenocortical insufficiency. This may also occur after a surgical operation on patients taking a regular dose of cortisone, especially in those with ulcerative colitis having surgical treatment following steroid therapy. In all cases corticosteroids should be withdrawn gradually and the dose should be temporarily increased over the period of an operation. Collapse should be treated by immediate intravenous injection of hydrocortisone and the subsequent administration of prednisone or prednisolone. Corticotrophin might subsequently be of value in an attempt to stimulate further activity of the adrenal cortex.

CONCLUSIONS

Reconsideration of those emergencies to which reference has been made indicates that the following drugs should always be immediately available—

Adrenaline
Nikethamide
An injectable antihistamine (e.g. diphenhydramine or promethazine)
Injectable hydrocortisone
Vitamin K_1 if anticoagulants are used
Hyaluronidase

Others may be recommended for the particular drug or procedure involved.

In the event of trouble, although the care of the patient must be the primary consideration, the possibility of medico-legal repercussions must be kept in mind: all drugs should be rechecked at once and notes of the event made at the time.

ACUTE POISONING

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According to their causes cases of poisoning fall into three separate categories: accidental, rarely homicidal, and, most common, suicidal. In England and Wales in 1957 there were 3,508 suicidal deaths caused by poison, of which five out of seven were due to coal gas and carbon monoxide. Accidental poisoning deaths in that year were 1,186, of which more than two out of three were again due to coal gas and carbon monoxide, so that in the one year, including the 53 deaths caused by non-accidental poisoning by another person and deaths due to other effects of poisons, poisoning was responsible for 4,900 deaths. For most toxic agents only a small percentage of the cases of poisoning seen in hospital are lethal: i.e. 4 to 8 per cent. for aspirin, and 1.5 to 8 per cent. for barbiturates. A more correct idea of the total incidence of 'recognized' cases of poisoning would therefore be given by multiplying this total by a factor lying between 10 and 50. From my own collected information, in the British Isles it would seem that (excluding alcoholism, addiction and poisoning by therapeutic agents during treatment) poisoning accounts for between 0.33 and 1 per cent. of all admissions into the large general non-teaching hospitals (Locket, 1957). Thus poisoning is a common occurrence, and often life or death depends entirely upon the emergency treatment.

TREATMENT WHEN SYMPTOMS ARE PRESENT AND KNOWN TO BE DUE TO POISONING

The more active procedures in the treatment of poisoning are not only unpleasant but can be very exhausting. Since the acute effects of poisons can be exhausting too, the institution of unwise treatment in such a case may result in the death of the patient, whereas a conservative regime of treatment, consisting basically of watchfulness and intelligent anticipation based on knowledge of what can happen next, may result in uneventful recovery. It is more particularly in exhausted infants and children that certain procedures and therapeutic agents can be particularly dangerous.

Treatment is two-pronged, being directed at the relief of symptoms as well as at the more specific poisonous agent itself (destruction, neutralization, antagonism, excretion) but these phases are not necessarily mutually exclusive. We are primarily concerned with saving the life of the patient; if life is not threatened by the poison, then our object is to relieve his discomfort and bring him to normal health in the shortest reasonable period. When seen the patient may be conscious or unconscious.

POISONING BY INGESTION

If corrosives have not been ingested, simple means of inducing vomiting (e.g. tickling the fauces with the finger, or drinking mustard or salt in tepid water) can be used or advised as an emergency measure in the home before the arrival of skilled help or before the patient is taken to hospital.

If the patient is conscious, and if poisoning has indubitably been caused by ingestion, the stomach must be washed out, provided the patient has not consumed a corrosive substance such as spirits of salts (hydrochloric acid), oil of vitriol (sulphuric acid) or caustic soda. When lavage is indicated, lavage with tap water or with readily available inert fluid (e.g. milk) is as effective as when special solutions are used. Tap water, being almost always available, wastes the least time in preparation, and time is an all-important factor. If the patient is conscious and has ingested a corrosive substance, usually indicated by burns on the chin, chest and tongue, gastric lavage is contraindicated.

If a *corrosive acid* has been ingested, ensure that the patient swallows about ten ounces (300 ml.) of a paste containing about four heaped tablespoonfuls of magnesium oxide mixed with water or milk. If magnesium oxide paste is not readily available, use a solution of soap in water or milk, or use milk alone, or wall plaster, ceiling plaster or lime water (i.e. a solution of slaked lime). Incidentally, it should be noted that soap solution does not mean solutions of the synthetic detergents which would be useless here and even dangerous, and that wall and ceiling plaster do not refer to the newer matt-finish plastic wall paints which would also be useless for this purpose. All carbonates such as washing soda and chalk, or bicarbonates such as bicarbonate of soda are forbidden. If they are taken their contact with the ingested acid in the alimentary canal results in the liberation of large volumes of carbon dioxide gas. This large volume of gas will produce gross distension and can cause perforation or rupture of the eroded viscus: i.e. œsophagus, stomach or small intestine. Crushed egg shells, or better still the entire raw egg, i.e. shell and contents, may be used. Although the shell contains some calcium bicarbonate, this is neligible in quantity.

If a *corrosive alkali* has been ingested, give four ounces of vinegar (120 ml.) or 120 ml. of 5 per cent. acetic acid solution, or 2 to 3 ounces (60 to 90 ml.) of lemon juice or lime juice (juice of the fruit, not to be mistaken for lime water which would be useless here and even dangerous). Citric acid or tartaric acid if available may also be used.

It is essential always to make sure that the stomach is not overloaded with the volume of these chemical neutralizers. The stomach wall may be markedly corroded and thus easily liable to burst. It is therefore wiser to ensure that the patient receives small volumes at short intervals—with a maximum of 10 ounces in thirty minutes for an adult and 20 ounces in the first hour. If the nature of the corrosive agent is unknown (e.g. diagnosed, because of burns present on chin, and chest, and hands or in mouth), and provided there is no smell of carbolic or cresols, give the patient milk or the

contents of several uncooked eggs. If the burns are due to carbolic acid, cresols or related substances lavage can be performed.

If the patient has taken a *cyanide*, artificial respiration or the administration of oxygen is useless. Gastric lavage immediately after the ingestion of a cyanide has on very rare occasions been of value; most times it is useless alone or if given before institution of more specific treatment. In the absence of cyanide 'safety kits' or the specific antidotes, gastric lavage must take first place. Amyl nitrite can be given by inhalation while the appropriate antidote solutions are being prepared for injection. First inject intravenously 10 ml. of a 3 per cent. solution of sodium nitrite, taking between two and four minutes to complete the injection, and follow this immediately with a second intravenous injection of 50 ml. of a 25 per cent. solution of sodium thiosulphate. Gastric lavage with a solution of sodium thiosulphate (25 per cent.) can be carried out by an assistant while the intravenous injections are being given. Alternatively, for the gastric lavage a solution of hydrogen peroxide can be used: 2 ounces (60 ml.) of ten volume strength in one pint (600 ml.) of tepid or cold water, or if the 20 volume strength is available, 1 ounce (30 ml.) in one pint (600 ml.) of water.

Where cyanides are being handled, it is essential that a special safety kit be easily available. This safety kit should contain ampoules with the antidotes already made up and ready for immediate injection. It should contain also the necessary sterile syringes and the requisite apparatus for gastric lavage. Some drug companies issue special ready-made packs for this purpose.

The unconscious patient.—If the patient is unconscious after ingesting any poison, and if spontaneous respiration is absent, or if asphyxia is threatening in any degree, artificial respiration must be given first. The only occasion to which this does not apply is when the loss of consciousness is due to cyanide poisoning. The intravenous remedies for cyanide poisoning must be given first. In any case, the patient with no spontaneous respiration who has ingested cyanide will probably be dead when first seen. If when the patient is seen he is unconscious, but nevertheless respiration is reasonably adequate, we proceed with the routine as for the conscious patient. All unconscious patients are given 250,000 to 500,000 units of penicillin parenterally every six hours, or a suitable alternative antibiotic.

Any patient, conscious or unconscious, who has ingested *morphine*, opium, 'omnopon', 'pantopon', pethidine, methadone ('physeptone'), 'metopon', heroin, phenadoxone, levorphanol ('dromoran'), or any of the available morphine derivatives or compounds with a morphine-like pharmacological action, synthetic or natural, must be given an immediate intravenous injection of nalorphine ('lethidrone'); or levallorphan ('lorfan'). On those rare occasions when the actual narcotic dose taken is known, in the case of morphine use nalorphine in one-tenth the dose of morphine, in the case of opium or 'omnopon' use nalorphine in one-thirtieth the dose, and in the case of pethidine use nalorphine in one-fiftieth the dose. Alternatively,

inject 5 to 10 mg. of nalorphine and, if an adequate increase in pulmonary ventilation and rise in blood pressure are not obtained with the first injection, repeat the dose in ten to fifteen minutes. If nalorphine is given by subcutaneous or intramuscular injection the action is slower in onset and the dose should not be repeated until twenty to thirty minutes have elapsed.

If levallorphan is used the doses in which it is given are: one-thirtieth the dose of morphine taken, one-hundredth the dose of pethidine, opium or 'omnopon', and for levorphanol one-tenth the dose. Alternatively, give 1 to 2 mg. of levallorphan tartrate intravenously: if adequate spontaneous respiration is not obtained within five to ten minutes, one-half of the initial dose may be repeated.

For convulsions which are not due to asphyxia, paraldehyde (intramuscularly, 2 to 10 ml.), thiopentone (intravenously, up to 1 g.) and phenobarbitone sodium (intramuscularly, 100 to 200 mg. [1½ to 3 grains]) are the most satisfactory. Convulsions due to strychnine are best treated initially by intravenous thiopentone, repeated as required, and for convulsions due to an anti-cholinesterase compound (e.g. organo-phosphorus insecticide) give 2 mg. of atropine intravenously and 6 mg. intramuscularly.

When the symptoms are due to poisoning by *arsenic* (usually the oxide) or a *mercury salt* (often corrosive sublimate), dimercaprol (BAL) must be given immediately and before proceeding with gastric lavage: 3 mg. per kg. of body weight at four-hourly intervals by intramuscular injection is the dose for severe arsenical reactions, and 2.5 mg. per kg. for mild reactions. In the case of mercurial poisoning use 5 mg. per kg. of body weight for the first dose and then 2.5 mg. per kg. for successive doses.

GASTRIC LAVAGE

Gastric lavage is usually combined with gastric aspiration. The apparatus required consists of:—

(a) A substantial tube, and a very useful one is a stout rigid œsophageal tube of the largest diameter that can be comfortably passed in an adult. Smaller sized tubes are used for children. The average adult gullet will easily allow the passage of a tube about half-an-inch (13 mm.) in diameter, with a rounded end, and about 60 inches (150 cm.) long. Any flexible substance will do; rubber or plastic do equally well. A no. 8 to no. 10 French catheter is suitable for infants, and a no. 10 to no. 12 for older children. The lower end of the tubes should be perforated by several openings on opposite sides to prevent blockage by any particulate or more solid material which may be present in the stomach.

(b) A suitable lubricant: liquid paraffin, glycerin or soft paraffin. In an emergency the ordinary household provides many good lubricants: butter, margarine, cooking fat, lard or cooking oil are usually readily available.

(c) A large syringe, preferably made of glass or transparent rigid plastic, which fits the end of the œsophageal tube or, alternatively and less satisfactorily, fits the tube when used with an appropriate adapter. A syringe with a bulbous nozzle ensures a good tight fit.

(d) A funnel, made of glass or transparent rigid plastic which can be comfortably and firmly attached to the stomach tube.

(e) Several scrupulously clean and labelled jars of 6 to 8 ounce (180 to 240 ml.) capacity, with metal screw lids. These are of great value, being immediately available for the collection of gastric content samples in any emergency.

For gastric aspiration and the actual gastric lavage the patient must be placed in such a position that the mouth is situated at a lower level than the rest of the body. The ideal position is to have the patient lying prone with his head over the end of the table or bed (fig. 1). Some clinicians and

FIG. 1.—Gastric lavage, showing correct position of patient.

nursing staff prefer to use the lateral position with the head lowered in relation to the abdomen. Patients who struggle, be they stuporous or conscious, are best immobilized by wrapping them in a blanket. They are less likely to struggle if in a prone position when the lavage is attempted.

Before the tube is passed all dentures are removed and the mouth is opened and, if necessary, held open by means of a gag. The appropriate tube having been chosen, it is lubricated with the available lubricant and passed over the tongue and down the œsophagus.

The tube is passed into the stomach by depressing the tongue with a finger and then sliding the tube along the finger until it reaches the posterior wall of the pharynx and thence down into the œsophagus. When the distal end of the tube is judged to be 20 inches (50 cm.) from the teeth in an adult, and 10 inches (25 cm.) in an infant, it can be assumed to be lying in the stomach. It is important therefore that the tube be marked at these appropriate levels. The tube being correctly in place, the syringe is attached to the end of the tube and suction is applied by gently withdrawing the syringe plunger. Gastric contents flow up and enter the syringe during this initial aspiration. The tube is then compressed by the operator, the syringe detached and the contents emptied into one of the jars. This procedure is repeated until no more can be aspirated. All the aspirated contents must be preserved, and it is advisable to keep these in a separate container from the gastric washings. Both groups of specimens must be kept, since they may be required later should any further analytical procedures be necessary, or for medico-legal purposes.

When aspiration is completed, the syringe is detached and replaced by the funnel. With the tube still in the stomach, warm (tepid) water is poured into the funnel. After about a pint (500 to 600 ml.) in an adult, and less in children, has been judged to enter the stomach, the funnel is lowered and inverted over a bucket or bowl placed on the floor, or at least below the level of the patient, and the gastric contents can then be syphoned out. When the water for the washout is being poured into the funnel, the funnel is held above the level of the head of the patient. While the final part of the water is being poured, the stomach tube and funnel will be full of water. At this stage the tube is pinched off, at about the site of its junction with the funnel. Still constricted, the tube and funnel are now lowered until they are below the level of the stomach. The funnel is then inverted over the bucket and the constriction of of the tube is released. This allows the water to syphon out of the stomach into the bucket. Constriction of the tube while it contains fluid is absolutely essential in order to obtain this syphon action.

Large volumes of fluid are not used for gastric lavage, although a much smaller volume is used in a child than in an adult. Two separate washings are all that is necessary for the majority of poisons; only in exceptional circumstances should more be carried out: e.g. ingestion of naphthalene (moth balls), or after large quantities of aspirin. It is exceedingly unlikely that any useful purpose will be served by giving more than four washouts.

The knowledge that the patient has been vomiting or that an emetic has been given must never be considered as a reason for dispensing with gastric lavage. There can be no justification ever, at any age, for the use of emetics *instead* of gastric lavage. After gastric lavage in the conscious patient the administration in an adult of half a pint (300 ml.) of cold milk, or an appropriate volume in children, is of great value irrespective of the nature of the poison and is often welcomed and greatly appreciated.

POISONING CAUSED BY INHALATION

The lethal agent in domestic practice is invariably *carbon monoxide* (coal gas and exhaust fumes). When dealing with gas poisoning in the home, all windows and doors must be opened, gas taps turned off and artificial respiration started immediately. Elsewhere the patient must be removed quickly to fresh air, unless the gas escape can be stopped and ventilation greatly increased. Do not forget to use your own respirator when attempting rescue from a well, silo pit or gas leak.

If the patient is conscious when removed from the poisonous gas, he should be left at complete rest for twenty-four hours. If the gaseous agent is one of those known to be able to produce delayed pulmonary œdema (e.g. phosgene), he must be kept at rest for forty-eight hours.

Should the patient be unconscious, place him prone (if the Safar and McMahon technique of artificial respiration is being used as a routine, the patient is placed in the supine position) and quickly ensure that he has a clear airway. This must be carried out expeditiously, but time must not be wasted if the patient's jaws are clenched before instituting artificial respiration should this be considered essential. Trismus is often due to asphyxia, and with adequate ventilation and oxygenation by artificial respiration, relaxation of the spasm of the jaw muscles rapidly occurs. Oxygen can be administered by nasal catheters or whatever suitable apparatus is at hand.

If spontaneous respiration has ceased or asphyxia is present, artificial respiration must be given immediately, and must be continued for quite long periods—for several hours even, should this be necessary. If no help arrives, it must be given continuously for at least thirty minutes before halting briefly to attempt to verify whether or not the patient is alive. If help arrives, then is the time to examine the patient while a rescuer continues with artificial respiration. Only when there are indubitable signs of death is it justifiable to decide that artificial respiration has failed and can be stopped.

Exposure to *irritant gases* (e.g. ammonia, sulphur dioxide, or chlorine) in high concentration may cause asphyxia due to laryngo-spasm. When this occurs, removal from the gas and administration of oxygen result in relief of the spasm in most cases. Tracheotomy may become necessary, but this is exceptional.

ARTIFICIAL RESPIRATION

The best method to use is the one with which the practitioner is acquainted. Much experimental work on the techniques of artificial respiration has been carried out in recent years on human volunteers under barbiturate-curare apnœa (Gordon *et al.*, 1951, 1952). As a result the Schäfer prone-pressure method and the unmodified Nielsen and Emerson methods have given way to the arm-lift back-pressure, or modified Holger Nielsen, method. It should be borne in mind, however, that compressive methods of artificial respiration are not free from danger, and this is more particularly so in the elderly and the very young. It is partly for this reason and partly because compressive methods do not provide fully adequate pulmonary ventilation that Safar and McMahon (1958) have recommended their 'mouth to airway' emergency artificial respiration: a more hygienic version of the ' mouth to mouth ' breathing method used by Elisha (2 Kings IV, verse 34) in reviving the child of the Shunammite woman.

It cannot be emphasized too often that when artificial respiration is necessary it is urgently and immediately necessary.

Mouth to airway emergency artificial respiration.—This method uses an S-shaped instrument made out of the conventional airway of the Guedel

FIG. 2.—Holger Nielsen method of artificial respiration, showing correct position for patient and operator.

type. A size 3 oro-pharyngeal rubber airway is attached to a size 4 oro-pharyngeal rubber airway, this forming the S-shaped instrument. One half of this instrument serves as the mouthpiece for the rescuer, and 1.5 cm. of the tip of the size 3 airway is cut off so as to give a more blunt angle. For use in infants a similar smaller instrument is made by fusing a size 0 and a size 2 airway, and in this case 1 cm. of the tip of the size 2 airway is cut off.

The rescuer places the patient in a supine position, forces the mouth open with one hand, removes any foreign material with the other hand, holds the tongue forward and inserts the airway over and along the curve of the tongue (the tongue must not be prised backwards in doing this). In the larger adult instrument the long end of the airway is used for adults and the short end for children, and the short end of the smaller (child's) instrument is used for infants.

The operator places himself so as to face the vertex of the head of the supine patient, and after insertion of the airway extends the patient's head, grasps the ascending rami of the mandible with both hands just beneath the ear lobes and pulls forcefully upwards. This is essential in order to keep the pharynx open; sometimes a markedly forward displacement of the mandible may be necessary. Air leaks are prevented by occluding the patient's nose with the thenar eminences and by covering the corners of the patient's mouth with the thumbs. After a deep breath the rescuer blows immediately and forcefully into adults, gently into children, and 'puffs' only with his cheeks into infants. He must watch the patient's chest all the

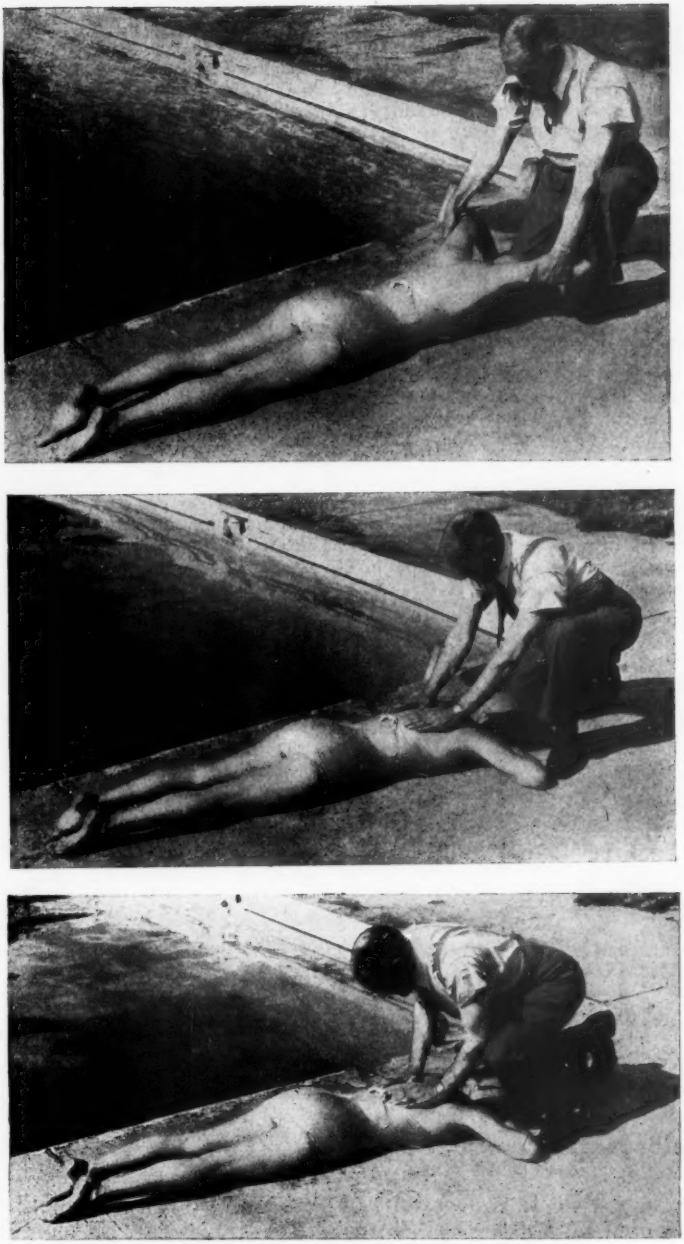

FIG. 3—Holger Nielsen method of artificial respiration.

time, and when he sees the patient's chest rise he removes his mouth from the mouth-piece and permits passive exhalation by elastic recoil of the lung and the chest wall. In any emergency the first 10 to 20 breaths are given fairly rapidly and deeply and from thence on a rate of 12 to 20 a minute is satisfactory.

If the patient's stomach becomes distended, gentle manual pressure over the epigastrium between breaths will often expel this air.

Rescuers can breathe at a rate of 12 per minute and maintain the patient's volume of tidal air at 1000 ml. and not become dizzy even after thirty minutes of uninterrupted mouth-airway breathing.

Modified Holger Nielsen method.—The patient is placed in the prone position, the arms are flexed, the hands placed upon each other and the head is turned to one side and rested on the backs of the hands (fig. 2).

The rescuer kneels facing the patient and at his head. He now places his hands under the patient's arms just above the elbows. The rescuer then rocks backwards keeping his elbows straight and thus drawing the patient's arms upwards and towards him (fig. 3a). This lift is continued until firm resistance is met. The arms are then replaced on the ground and the rescuer moves his hands to the patient's back (fig. 3b). He places his hands over the mid-back with the fingers spread downward and outward, the thumbs touching the spine and the heels of the palms at the level of an imaginary line drawn between the two axillæ. He then rocks forward keeping his arms straight and allows the weight of the upper part of his body to exert steady and gradual pressure almost vertically downward upon his hands until he meets firm resistance (fig. 3c). He then rocks backwards repeating the cycle. Each phase of this cycle lasts about 2½ seconds, and the entire cycle is repeated 12 times each minute.

POISONING BY INJECTION

If the drug has been administered parenterally, all the general measures already described can be applied as and when necessary. When the injection has been given intravenously or intramuscularly, local measures are useless as dissemination occurs too rapidly. If, however, the poison has been given intradermally or subcutaneously into a limb, application of a tourniquet may help. The patient is treated expectantly and the tourniquet is released for 15 seconds every 15 minutes. It is only necessary to obstruct venous flow and not arterial, and a pressure of up to 50 mm. Hg is more than adequate.

POISONING BY SKIN ABSORPTION

The *organo-phosphorus insecticides*, *nicotine* and *dimethyl sulphate* can be appreciably absorbed from skin. Treatment consists of washing the skin with soap and water unless it is ulcerated or markedly blistered. Cold water is used when liquid organo-phosphorus insecticide is the contaminant. For this latter toxic substance prophylactic injections of 2 mg. of atropine sulphate are given intravenously.

TREATMENT WHEN SYMPTOMS ARE ABSENT BUT CONTACT WITH POISON HAS BEEN INTIMATE

The time factor here is of particular importance, as well as the nature of the poison and the age of the patient. Thus, pulmonary œdema may not

develop for twenty-four to forty-eight hours after exposure to oxides of nitrogen or phosgene, and symptoms usually do not occur until twelve to fifteen hours after eating *Amanita phalloides*. On the other hand, if twenty-four hours have elapsed without development of symptoms, then, excluding pulmonary œdema, there are very few toxic substances likely to cause acute symptoms after this interval.

If the patient is seen within a few minutes of ingestion of poison, gastric lavage is necessary, except in cyanide poisoning when the specific remedies described earlier are administered, and after corrosive sublimate ingestion and arsenic salt ingestion when dimercaprol should be given by injection before instituting lavage.

Knowledge of the possible course of the presumed ingested poison is of help in deciding further action. If iron salts (e.g. ferrous sulphate) or antihistaminics have only probably been ingested by children, gastric lavage must invariably be performed. On the whole, the performance of gastric lavage in the absence of symptoms can be considered a wise measure if the patient is seen within two hours of ingestion of poison, and in many cases is worth doing within four hours of ingestion but, in the absence of symptoms, is seldom justified ten hours after ingestion.

TREATMENT WHEN SYMPTOMS ARE PRESENT BUT DIAGNOSIS UNCERTAIN, AND POISONING IS A PROBABILITY ONLY

The sudden onset of an illness only a few hours before the patient is seen would justify the institution of treatment for poisoning provided no other diagnosis is positive: e.g. dimercaprol for syndromes which might be due to mercuric salts or arsenic salts, or sodium calciumedetate ('calcium disodium "versenate" ') for acute lead encephalopathy. This is even more justified if the symptoms could be caused by a toxic substance known to cause death or serious illness in a high percentage of cases: e.g. arsenic, mercury, acute lead encephalopathy).

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EMERGENCIES IN TROPICAL MEDICINE

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THE pattern of disease changes as we pass from temperate climates to the tropics, although the changes are of emphasis rather than of quality. Some diseases become much commoner during the transition, others less so, but it is as rare to find a disease confined to the tropics as it is to find one confined to the temperate zone, more especially since the speed of air travel now enables a person to move across half the world during the incubation period of most infections. It follows therefore that the practitioner in tropical countries is likely, on occasion, to have to deal with most of the emergencies met with elsewhere in the world, to which will be added, in more or less abundance, emergencies occurring in the course of those diseases which, by reason of their relatively heavy incidence in the warm countries, are called tropical. It is with certain of the more serious of these that this article is concerned.

MALIGNANT TERTIAN MALARIA

Of the four species of malaria parasite which affect man, only ***Plasmodium falciparum*** of malignant tertian malaria commonly causes an infection which, if unchecked by treatment, is often fatal. Although this parasite has a wide distribution in the tropics and extends to the temperate zones, it is nowhere so common as in tropical Africa, where it accounts for over ninety per cent. of all cases of malaria. Africans themselves are to some extent tolerant of the disease and seldom get heavy or troublesome infections. It is in the blood of other races that the parasites are likely to run riot during the second week of the disease and to produce those overwhelming infections which if untreated are rapidly fatal. Prompt recognition and treatment of malignant tertian malaria are therefore always important and become increasingly so as the disease progresses.

The clinical features of malignant tertian malaria are diverse, variable and of no particular importance as regards diagnosis, which is readily and precisely made by finding the parasites in the patient's blood. The disease should always be the first to be considered in patients with fever who live in, or have recently arrived from, areas where it is endemic. Those patients whose lives are in immediate danger will have been febrile for at least a week and will be either continuously delirious or unconscious, or will have suffered such a severe fall in blood pressure that they lie almost pulseless, cyanosed and bathed in cold sweat. In either case there is no time to lose.

If the condition is due to malaria, the blood will be swarming with parasites, the presence of which can be determined at a glance by examining a thick blood film stained by Field's stain. No-one is properly fitted to practise medicine in the tropics unless he is able to make this examination himself. Efficient microscopes, with battery illumination, as compact and portable as a 35-mm. camera, are obtainable and should be standard medical equipment in malarious countries.

Although there should be no delay in treating malignant tertian malaria, there is usually no particular urgency during the first week of the illness, when any one of half-a-dozen different anti-malarial drugs given by mouth in recommended doses will suffice to cure the attack, although quinine is best avoided because of the slight risk of its causing blackwater fever. In the terminal stages of a severe infection with a heavy parasitæmia, however, when the patient is vomiting or unconscious or collapsed, it is important to select the quickest-acting anti-malarial drug—chloroquine—and to inject it intravenously so that it may exert its action with the least possible delay. Chloroquine is available for injection in ampoules of 5 ml. containing 200 mg. of the base, and the contents of one ampoule should be injected into a vein over a period of two or three minutes. The injection causes no reaction other than an occasional sensation of heat and flushing of the face. If the patient is unconscious or unable to swallow and retain tablets, the contents of a further ampoule should be given intramuscularly; otherwise four 0.2 g. chloroquine tablets can be given by mouth. It will not then be necessary to give any more anti-malarial drugs for about twelve hours. As, however, even the best drugs take from twenty-four to thirty-six hours to reduce a heavy parasitæmia to reasonable proportions, it may well be necessary to institute measures designed to maintain the patient's general condition for long enough to allow the drug to achieve its action. If there is evidence of circulatory failure—that is, if the patient is collapsed, cyanosed and has a systolic blood pressure of 100 mm. Hg or less—an intravenous drip of 5 per cent. glucose saline should be set up and to the solution should be added noradrenaline in the proportion of about 10 micrograms to the litre. The rate of flow of the drip must be adjusted to restore the systolic blood pressure and to maintain it at normal levels. Twelve hours will almost always see the emergency over. By that time the patient will be either out of danger or dead.

BLACKWATER FEVER

Blackwater fever is a disappearing disease. It consisted usually of several successive intravascular hæmolyses, which might cost the patient three-quarters or more of his red cells within a few days and kill him either from anæmia or, more often, from renal failure.

Of blackwater fever it was said that 'malaria loads the gun and quinine pulls the trigger'; that is to say, the characteristic history was one of a chronic infection with malignant tertian malaria, damped down by in-

adequate doses of quinine, and terminating in a recrudescence of fever self-treated by a large dose of quinine, which led to hæmoglobinuria. The disease has receded with the replacement of quinine, both as a suppressive and a curative drug, by superior synthetic anti-malarials. As there is still, however, a diminishing, though resolute, band of quinine-takers, blackwater fever is not yet quite dead. There was no difficulty in diagnosis, which was usually made by the patient. The appearance of the urine was characteristic: at first clear red (oxyhæmoglobin), it soon became dark brown (methæmoglobin), often repeating these colour changes with each successive hæmolysis. (It used to be said that the colour of the urine changed from that of port to that of porter.) Blackwater fever was a discouraging disease to treat, and few with much experience of it could honestly claim that anything they did had much effect upon the outcome.

Unnecessary movement of the patient should be avoided. The intake and output of fluid should be recorded, and each specimen of urine passed should be examined, as some idea of the progress of the disease can be obtained in this way. The chief danger is from anuria. There have been some suggestions that this catastrophe can be prevented by administering the adrenal steroids in full doses from the onset of hæmoglobinuria: cortisone, 200 to 400 mg. daily, or prednisone, 40 to 80 mg. daily. Preparations for blood transfusion should be made in good time, for there is usually difficulty in finding a donor with compatible blood; but transfusions need not be given unless the red cells have fallen below 2 million per c.mm. Transfused cells are just as liable to hæmolysis as those of the patient. Malaria parasites are always scanty in blackwater fever, and there is no urgency in getting rid of them; but, if the disease takes a favourable course, chloroquine or proguanil should be given to eradicate the underlying malaria.

A condition of methæmoglobinuria which resembles a short attack of blackwater fever may be seen by those injudicious enough to prescribe pamaquin or any other 8-aminoquinoline to negroes. Africans are unduly susceptible to this form of pamaquin poisoning and should therefore never be given the drug.

AMŒBIASIS

Amœbiasis may present as an emergency because of the development or rupture of an amœbic liver abscess or, more rarely, because an amœboma of the colon may simulate an appendix abscess or a carcinoma or provoke intestinal obstruction.

An amœbic liver abscess in its early stages is usually easily recognizable by the combination of a swollen tender liver, swinging fever, moderate leucocytosis, and more or less restriction in movement of the right side of the diaphragm. Jaundice is absent. There may or may not be a history of dysentery. Although amœbic liver abscess is always secondary to intestinal amœbiasis, it is unnecessary to await confirmation of the diagnosis by finding

amœbæ or their cysts in the stools before starting treatment. This consists of giving either emetine or chloroquine or both. Emetine hydrochloride, 1 grain (60 mg.), is given by daily subcutaneous injection for twelve days; chloroquine sulphate, 0.5 g., is given twice daily by mouth for five days. The normal response to this treatment is the disappearance of the various signs

FIG. 1.—Aspiration of an amœbic liver abscess.

and symptoms within four or five days, but it must be stressed that the underlying intestinal infection will remain unless it is eradicated by further treatment. In more advanced cases of liver abscess, in addition to chemotherapy, the necessity to aspirate the pus may be indicated by bulging of the lower right intercostal spaces or by pointing of the abscess in some other situation. The technique of aspiration is simple enough. Local anæsthetic is injected into the skin and underlying tissues at the site of election. The aspirating needle should be of wide bore to facilitate the flow of pus, which is usually very viscid. The needle is connected by rubber tubing to a 50-ml. syringe provided with a two-way nozzle so that the aspirated pus can be discharged into a receiver (fig. 1). The amount of pus aspirated is usually from 1 to 2 litres. It is seldom necessary to aspirate more than once.

If an amœbic abscess is allowed to develop unchecked, the lytic process will presently pass the confines of the liver, allowing the abscess to discharge into an adjacent part of the body or externally. As abscesses are usually in the upper part of the right lobe of the liver, they most commonly extend upwards through the diaphragm and discharge either into the pleura, producing a sudden large empyema, or, more often, into the lung, when the characteristic pus is coughed up in great quantity. The sudden development of an amœbic empyema collapses the right lung and thrusts the mediastinum to the left, causing the patient considerable shock and respiratory distress.

Aspiration and emetine are needed immediately, and later it may be necessary to seek the help of a thoracic surgeon, as secondary bacterial infection or a broncho-pleural fistula may develop. In uncomplicated amœbic liver abscess surgery is usually unnecessary, but it does no positive harm provided that the condition is recognized at operation and the proper medical treatment is given. If this is not done the patient is likely to die within a week, with extensive hepatic, peritoneal and dermal amœbiasis (fig. 2).

FIG. 2.—Fatal result of draining an amœbic liver abscess one week earlier without giving emetine or chloroquine.

Long-continued amœbic ulceration of an area of the large intestine, associated with secondary infection, may provoke sufficient granulomatous reaction and adherence to adjacent structures to form a palpable mass. This is the condition called an amœboma. It is commonest in the cæcum but it may occur anywhere in the large intestine, and it may simulate some surgical emergencies such as appendix abscess and carcinoma of the colon, or produce others such as intestinal obstruction and intussusception. In such cases, if there is a history of dysentery or if entamœbæ are found in the stools, the patient should be given daily injections of emetine hydrochloride, surgery, if possible, being deferred until the effect of the drug has been observed. The symptoms and signs of amœboma respond very well to a few injections of emetine, after which, as in all forms of amœbiasis, a course of treatment to eradicate the infection must be given.

HEAT STROKE

Among the various ill-effects which exposure to heat may induce in the human body there is one which is likely to be rapidly fatal unless recognized and treated without delay. In certain persons exposed for varying lengths of time to high atmospheric temperatures, the heat-regulating mechanisms cease to operate. The reason for this is unknown, but the effect is that sweating ceases, there is a steady rise of temperature, and, usually after a period of mental confusion and physical incoordination, the patient becomes unconscious. The distinguishing clinical features are the hot, flushed, dry skin and the fever which rises to heights found in hardly any other conditions and not long compatible with life. The condition is treated by taking all available steps to lower the temperature to reasonable levels, including

such physical methods as cold bathing or driving a current of air by an electric fan across a wet sheet laid over the patient's body. The rectal temperature should be taken at frequent intervals, and the cooling measures should be stopped when the temperature has fallen to 100° F. (37.8° C.). The patient must be kept under observation for a few days afterwards, because it takes some little time for the heat-regulating mechanisms to return to normal and further rises in temperature may occur, necessitating a repetition of cooling.

When treatment of heat-stroke is begun, it is important in malarial zones to examine the patient's blood to make sure that the cause of his unconsciousness is not malignant tertian malaria.

SNAKE-BITE

Snake-bite is not a common accident, and it usually happens in situations where no specific treatment is possible. The offending snake is seldom killed and brought for identification, and the source of the bite is often not even seen. Indeed, it may not be due to a poisonous snake or to any snake at all, as in the following case.

A gentleman had taken his position on the seat of a bucket latrine in Africa when to his dismay he received from beneath what seemed to him to be the bite of a large snake. Rising, he made his way with all speed to a nearby dispensary, where examination of the injured part showed the double puncture said to be characteristic of snake-bite. Local treatment and antivenene were administered without delay, but a search party sent out to recover the snake found nothing more than a scavenging hen, which, doubtless alarmed by the sudden obliteration of the light, had protested by pecking the obstruction.

When required to treat a patient for snake-bite it should be remembered that:—

(1) Most snakes are non-poisonous.

(2) Of the poisonous snakes only a minority are capable of delivering a fatal dose of venom.

(3) Even a deadly snake may, for various reasons, fail to inject a fatal dose.

(4) The bites of Elapidæ (cobras, kraits, mambas and Australian poisonous snakes) cause incoordination and difficulty in swallowing. If fatal, they are so by respiratory paralysis within six hours.

(5) The bites of Viperidæ (puff-adders, Russell's vipers, rattlesnakes) cause persistent pain and severe local reaction at the site of the bite. If fatal, they are so in from two to six days later and are associated with severe and extensive bleeding into the skin and elsewhere.

It is therefore likely that many patients will need no more than reassurance, because the time which has elapsed since the bite, and the absence of definite symptoms, will have excluded the possibility of serious poisoning.

Immediate local treatment of the snake-bite should be restricted to sucking the wound after washing it. Violent measures, such as rubbing in potassium permanganate crystals after incision, are likely to do more harm than good and may cause permanent damage (fig. 3). A ligature used

intelligently may delay the absorption of venom until antivenene is available; used ignorantly, it may involve the loss of a limb.

In those parts of the world where poisonous snakes are of any importance, polyvalent antivenene against the local dangerous species is usually available. It is the only specific remedy. It is prepared from horse serum and must be given intravenously in a large dose (40 to 100 ml.) as soon as possible after the bite. It must be remembered that horse serum itself can be just as deadly to sensitized persons as snake-venom, and it is unwise to give antivenene

FIG. 3.—This man was bitten on the wrist by an unidentified snake. Twenty-four hours later the bite was incised and permanganate crystals were introduced, thereby paralysing the median nerve and injuring the flexor tendons.

without first testing for sensitivity by injecting 0.1 ml. of a 1 in 10 dilution intradermally. If this is followed in a few minutes by an urticarial weal, it is unsafe to proceed with antivenene treatment.

RABIES

The emergency treatment of the bite of a rabid animal, or of one reasonably supposed to be rabid, consists of thoroughly washing the wound and adjacent skin with soap solution or any other detergent. Deep puncture wounds should be cautiously cauterized with a stick dipped in nitric acid. The area of the bite should be infiltrated with a few millilitres of anti-rabies serum, which should also be given by subcutaneous or intramuscular injection in a single total dose of 0.5 ml. per kilogram of body weight, after testing for sensitivity by the intradermal injection of 0.1 ml. The decision whether or not to embark upon a course of rabies vaccine can then await the collection of all available information about the biting animal. Contacts of a rabid animal who have not been bitten require no emergency treatment.

MEDICO-LEGAL EMERGENCIES

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WHETHER he likes it or not, any medical practitioner may become involved in some acute problem involving a legal issue. Only when the possibilities are contemplated does the extent of the risk become apparent, and the impossibility of covering the whole field in detail within the space of one article becomes obvious. The scope of this article will therefore be limited mainly to generalization, at the same time drawing attention to certain specific examples which may be more than ordinarily significant. Initially, however, there can be no harm in stressing the obvious by saying that awareness of the pitfalls may avoid much trouble, and that on many occasions 'prophylaxis' is far more satisfactory than treatment.

Briefly there are two kinds of legal emergency, *criminal* and *civil*, and it is proposed to deal with them under these two headings, each being divided, in its turn, into problems involving the doctor's own interests and those involving the interests of his patient.

THE DOCTOR AT RISK

It may appear to be stating the obvious to say that from a personal point of view a doctor, being human, is no more immune than any other citizen, of similar social position, from the risk of committing or being accused of committing a criminal offence. The results, however, are much more serious: not only, if convicted, may he receive judicial punishment but also he may find himself before the General Medical Council—for every conviction is reported. Even if acquitted, the consequent publicity—and a doctor is 'news'—will do his prestige no good. Neither will the anxiety prior to acquittal help himself or his family, nor the cost of defence his pocket.

There are two particular situations in which anyone may find himself in difficulty, usually because, inadvertently, his behaviour appears abnormal or from pure force of circumstances. The first is being suspected of being *intoxicated while in charge of a car*, a situation which may arise, for example, from abnormal behaviour following an accident, and doctors are no exception. Such a state of affairs could occur and, if it does, is not a matter to be taken lightly: it is a serious charge and may have serious consequences if proved. Moreover, it is no time to study the convenience of a colleague when the police say that they are calling a doctor to examine. Should they offer the opportunity (as is their duty) of attendance of a doctor selected by the detained person, the offer should be unequivocally accepted and the name of a colleague given who is preferably an experienced police surgeon. This is no slur on the doctor selected by the police but rather a kindness as he will no longer be the only opinion in such a serious matter.

The other situation is one that underlines the fact that many doctors are of a trustful and unsuspicious nature and some, in spite of the contact that their profession establishes with humanity, are surprisingly innocent of the pitfalls that surround them. It goes without saying that it is inadvisable for any doctor to expose himself to suspicion or arrest, especially by frequenting odd places or behaving in an odd manner. For, however innocent he may be, once he is detained a charge will most probably be made, as initially he does not carry a badge indicating his profession and the other characters present may not be of such high professional integrity. In such an event it is best to contact a good solicitor *at once* and ask him to come to the police station.

There is yet a third emergency, and this may happen also in the course of his professional duties—*blackmail*. Here it is essential, and in moments such as this it may well require courage, to realize that, however trivial the threat or small the demand, legal advice must be taken *at once* (even if there is a skeleton in his cupboard). If there is a professional aspect, then he should consult his medical defence society. In fact it cannot be too strongly stressed that this procedure should be adopted in every medico-legal emergency which may involve his professional reputation. Moreover it *must* always be done *at once*, and no action taken independently before so doing. It is no exaggeration to say that nearly every case in which a medical practitioner is found in conflict with the Criminal Law arises either from neglect in applying the principles he was taught in forensic medicine as an undergraduate, or from failure to seek advice until it is too late. Examples of this are the absence of a 'chaperon' during the examination of a hysterical patient, failure to read the contents of a document before signing it, or appending a signature to certificates in blank.

Few doctors will be lucky enough, while in practice, to avoid meeting some unjustifiably disgruntled or dissatisfied patient. This may express itself in many ways. At one time it commonly took the form of a refusal to settle an account, usually after first ignoring it. Although occasionally a genuine expression of dissatisfaction, more often it was an excuse to avoid paying. Since the inception of the National Health Service, dissatisfaction is more likely to express itself in the form of an action for damages or a complaint to the appropriate administrative body. In any event, should such an unfortunate state of affairs arise the correct procedure is to consult the defence society *immediately*—and on no account to enter into negotiations independently. There can be few practitioners who have not made an error of judgment; such an error, however, is not necessarily legal negligence. It cannot be stressed too much that tactless handling of the situation initially may well precipitate a more determined attack upon the pocket as well as the professional reputation of the doctor. It may be significant that in the unheated, impartial atmosphere of the Coroner's Court it is no infrequent experience to discover that disgruntled relatives who have demanded an inquest and who are voicing all sorts of serious allegations against hospitals

and doctors, are found to have been labouring under misapprehension often engendered by lack of information.

A good example of this was the case of a man, whose only hope of survival lay in submitting to a serious cardiac operation. He died shortly after it was completed and his relatives expressed grave dissatisfaction and requested an inquest. This revealed that they had not been told of the severe risk and that after he died a nurse, obviously without appreciating its implication, had said: 'I can't think why he died'. The pathologist's evidence after necropsy was 'I can't think why he was alive', and everybody went home satisfied. Much of the trouble could have been avoided by a more personal approach by a medical attendant.

This applies especially in these days when the public, 'educated' by television, tends to regard closure of a ventricular septal defect in the same category as a herniotomy—for to the layman they are both 'operations'.

ABORTION

The emergency may involve the appreciation that a criminal offence has been committed when professional secrecy also exists, such as the all too common occasion when a woman who, having had some interference with a pregnancy, seeks medical assistance. Unfortunately this may be a late decision when she is desperately ill or even dying. The first duty of every practitioner, of course, is to save life; yet he must also protect his own interests and therefore should at once either obtain a second opinion or send the patient to hospital. There his responsibility will cease, for he will not only have passed it on but will also have removed the risk of being suspected of complicity. Self-induced abortion is usually of merely academic interest to the police, even in the event of an inquest. Professional secrecy should be observed but, if the practitioner is in any doubt, he should consult his defence society immediately. It is only when a culpable third party is involved that a problem of urgency may arise, especially if the patient should die later. Again, however confident the practitioner may feel, before informing the police he must consult his defence society and allow himself to be guided by its advice. This can always be done expeditiously by telephone and may, by its timing alone, avoid the doctor himself becoming the object of suspicion.

Therapeutic abortion.—If, on clinical grounds, this is desirable, the patient should always be referred to a hospital consultant who is a specialist in the condition for which the termination is considered desirable, and then either the practitioner himself or the consultant should refer the case to a consultant gynæcologist who should perform the operation in a nursing home or hospital. Never, however desirable it may seem, should the practitioner perform such an operation in his consulting room or by himself.

THE PROBLEM OF DRIVING LICENCES

One problem which may become more common as more people buy more motor cars, is that of the medical practitioner who knows his patient to be suffering from some disease which may make him a danger to the public should he drive although he already holds a licence. Severe disabilities are

usually incapacitating and self-evident. It is of interest to speculate, however, as to how many drivers have a clear recollection of what they certified when they signed their application for a driving licence. Many will be found either to have forgotten or never to have read the form, whilst a small minority have committed perjury. This, although socially serious, is not the responsibility of the practitioner; his interest lies in the fact that his patient has a legal authority to drive when unsuitable to be in control of a car. His duty must be to advise his patient to surrender his licence. Should he refuse to agree to do this, the doctor finds himself bound by secrecy because of his professional relationship, although the matter also clearly involves the interests of the community. The situation may be still more complex when the clinical prognosis is uncertain, as, for example, the epileptic patient who has had only one fit or who, although known to be suffering from the disease, has had no fit for some time. Ménièré's disease is another similar example.

The easiest precaution in such circumstances would be to obtain a second opinion of an authoritative character, drawing attention specifically to the problem, and then to advise the patient of the result, thus stressing the advice already given by the consultant. Should this be refused, whether it be not to apply for a licence or, if one is already held, to surrender it, the practitioner will be left in some difficulty because, whilst bound by professional secrecy, he can, if he has any imagination, visualize some member of the public, possibly even one of his own family, being injured or perhaps killed. As there is obviously no malice, and bearing in mind that the patient's own interests are involved, it is most improbable that any action would succeed against the doctor, should he reveal his knowledge to the authorities, but before doing so he should inform his defence society and be guided by the advice given.

SUDDEN OR UNEXPECTED DEATH

The most common emergency is associated with death and the procedure to be adopted when it occurs. Although sudden deaths constitute the majority of cases, those which are unexpected or deviate from the expected clinical picture may prove just as important. When called to a case of sudden or unexpected death, the emergency may present itself in several ways.

(1) *A patient upon whom the practitioner has been in attendance during the previous* 14 *days, and who has died as was expected in a manner to be anticipated from the natural disease from which he was suffering.*—In such a case it is in order, and indeed a statutory obligation, to issue a death certificate.

(2) *A similar patient who was expected to die but who died in an unexpected manner.*—In such a case it is wise to inform the coroner, remembering that such cases are better investigated. It may be of interest to someone to expedite the demise.

(3) *A patient under treatment but who has not been seen during the last* 14 *days.*—Although there is no obligation to do so, it is wisest to inform the Coroner rather than issue a death certificate which may be referred to the

Coroner, probably causing hardship and inconvenience to the relatives in respect of the funeral arrangements.

(4) *Any person, whether a patient or otherwise, who dies in circumstances which give rise to the possibility of accident or foul play.*—In such an event, having (with minimal disarray) ascertained first that the person is dead, and then collected data which will help to establish the time of death—e.g. temperature, rigor mortis—the police (if this has not already been done) should be told of the circumstances and the body should not be left unguarded until they arrive. It is advisable to make notes of relevant observations at the time.

(5) *Any person who is suspected of having died of violence* (*accidental, homicidal or suicidal*).—In such an event the Coroner should be informed at once through his officer, as well as the police. Commonly this can be done as one notification. (*N.B.* All deaths occurring in the bathroom or kitchen should be regarded with suspicion.)

(6) *Any person who has had a recent accident, or whose death might be associated with a previous accident, or who is drawing a pension from war or industrial disability, or who is believed to be suffering from some such condition as cirrhosis of the liver, fibrosis of the lungs, or any industrial disease or side-effect of drugs.*—In all such cases the Coroner should be informed through his officer. (*N.B.* It is advisable to report any case in which there is a history of an accident within a time in which it might have influenced death, rather than have it referred to the Coroner by the Registrar.)

Deaths occurring in the following circumstances should also be reported to the Coroner:—

(7) Any person who is suspected of having died of neglect or malnutrition.

(8) Any woman who has died from, or is suspected of having died from, abortion. (*N.B.* Sudden or unexpected death of any woman in the child-bearing age should be regarded with suspicion.)

(9) Any death which occurs during an operation or any therapeutic procedure. This also applies to deaths occurring shortly afterwards which might be associated with the procedure or the anæsthetic or later due to an unexpected complication.

(10) Any death in which the relatives express dissatisfaction with the treatment which has preceded the death.

It should be appreciated that, under the Coroners (Amendment) Act of 1926, if, after a post-mortem examination carried out by a pathologist of experience (preferably not associated with any of the parties involved—e.g. a hospital consultant), the Coroner comes to the conclusion that, despite the operative procedure or anæsthetic, the death is due to the original disease or condition that required treatment and that nothing amiss has occurred—i.e. that the death is due to natural causes—he may then dispense with an inquest. In this procedure it is implicit that the relations are satisfied and that no other circumstance exists that might call for an inquest.

(11) Any death which falls into a special category which requires notification, such as a foster child, or a prisoner in custody.

The following short summary of emergencies which may arise in practice and the advisable procedure to adopt may be of assistance.

POISONING

(1) Should suspicion arise of the poisoning being homicidal, treat the patient, remove him from risk, obtain a second opinion, and collect appropriate samples of material for examination.

(2) Should suspicion arise of any kind of poisoning, including carbon monoxide poisoning, treat the patient and collect material to confirm suspicion. This applies especially in cases admitted to hospital when samples of blood, urine and stomach washings should always be collected and retained.

CREMATION CERTIFICATES AND TESTAMENTARY CAPACITY

Cremation certificates.—In the case of the practitioner who is asked to sign the 'B' certificate and who knows he is a beneficiary under the Will of the deceased person or has pecuniary benefit, he should refuse to sign the certificate and should notify the Coroner stating the circumstances. It is in order to state the fact upon the certificate in the appropriate part but this will only lead to the same result. If asked to sign the 'C' certificate, a practitioner in the same position should refuse to do so.

Testamentary capacity.—When asked to witness a Will, be sure that you are *not* being used as a possible proof of testamentary capacity in subsequent litigation. If there is any doubt, insist upon the opinion of a consultant.

REFUSAL OF TREATMENT AND ATTEMPTED SUICIDE

Refusal of treatment.—Should a patient refuse to act upon advice in circumstances which might subsequently lead to an accusation of negligence—as, for example, an injury in which there might be a fracture and x-ray examination is refused—written evidence should always be obtained that the person does so on his own responsibility. Circumstances may arise, especially in cases of head injury, in which the person may not appreciate his position. In such an event, it is advisable to obtain a second opinion, even with a 'refusal form' completed, before allowing him to go home.

Attempted suicide.—In such cases it is uncommon for a prosecution to be instituted by the police provided that adequate protection of the person against a repetition is arranged: i.e. that the person is in the care of a responsible person or institution. Special care is required in the case of the patient who has made repeated attempts. Here, and indeed in every case, it is advisable to have the opinion of a psychiatrist. It is also advisable to remember that the police may already be cognisant of the attempt. In doubt the medical defence society should always be consulted.

THERAPEUTIC ACCIDENTS

If fatal the Coroner must be informed. At the same time advice should immediately be obtained from the medical defence society.

If not fatal, immediate consultation with an appropriate specialist should take place. Liability must never be admitted to the patient, even in a sympathetic moment. Such expressions as 'I am very sorry' may be most

compromising in evidence. The practitioner's defence society must be advised immediately and their advice accepted.

PATIENTS' COMPLAINTS AND ACCUSATIONS

Complaints by patients of malpraxis, errors of judgment or negligence.—In such cases the medical defence society should always be consulted at once. Negotiations must never be entered into with the complainant unless this is advised by the society. Liability must never be admitted.

Accusations of criminal acts such as indecent assault.—A third party should always be present when administering an anæsthetic and no opportunity given for allegations. If they are made, the defence society must be consulted immediately.

COOPERATION WITH THE POLICE

Finally, when asked by the police for assistance, as for example, by examining a patient who alleges some offence has been committed, if the practitioner genuinely feels himself unqualified to carry out such an examination, he should assist the police by recommending somebody who is, for it is most important in the interests of justice that the examination should be done properly.

When asked by the police to examine a person who is alleged to be intoxicated, the doctor should be sure by a thorough examination that he is not suffering from some disease or injury. If in doubt he should refer to the nearest hospital. Every year there are deaths in police cells.

When asked by the police, at the request of one of his patients, to attend to examine him on his own behalf when suspected of being intoxicated, if he genuinely does not feel qualified to do so he should recommend some other practitioner whom he knows is qualified and, if possible, inform him of any disabilities from which his patient is suffering.

When asked by the police to make a statement concerning one of his patients (and this includes casualties seen in hospitals), the doctor should do so if the person agrees. If he feels he should refuse, he should consult his medical protection society before taking any action. It may be that the circumstances are such that the interests of the public take precedence.

When a person who is dead or dying is brought to the doctor in circumstances which suggest foul play, he should immediately notify the police. If death has occurred he should not allow the body to be placed in refrigeration, unclothed or washed. The temperature should also be taken and notes made of all relevant observations such as wounds. If operative procedure will interfere with any evidence of violence, the operator should make careful notes of the site, appearance and size of the injury, and any tissue excised, especially stab wounds and bullet wounds, should be retained.

It is sometimes forgotten that every medical practitioner has the ordinary duties of every citizen and, because of his position, must not consider himself above the law. Should these duties conflict with his professional ethics, he should always seek expert advice.

THE THERAPEUTIC VALUE OF ORAL GLUCOSE

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It may seem strange that, after fifty years of the therapeutic use of glucose, a communication on its value should now appear. This is occasioned by a surprising announcement from the Food Standards Committee (1959) that there is no evidence that dextrose is more readily available to the body than sucrose, or that the components of liquid glucose are better utilized than sucrose. It is obviously important that these statements should be considered carefully and confirmed or rejected. I believe that the following arguments will show that the Food Standards Committee's criticisms are unproven and that the whole matter needs far greater research before any irrevocable action or advice be initiated.

For more than fifty years glucose has been given by mouth to patients for whom a full diet was impossible or unsuitable, as well as to patients suffering from liver disease. During the 1939-45 War, despite the shortage of glucose in this country, the Ministry of Food allowed the continued distribution of glucose beverages through pharmacists. A recent survey among general practitioners in this country showed that 82 per cent. were in the habit of recommending or prescribing oral glucose (Ovens, 1958). The basis for this widespread acceptance is a general belief that glucose is more rapidly and readily utilized for energy production than any available alternative. Is there any evidence, other than that of tradition, for the accepted superiority of glucose in this respect over cane sugar, the chief alternative? An attempt is here made, on the basis chiefly of published work, to answer that question.

DEFINITIONS

What is glucose? The substance generally known to medical men by that name (and also called pure or medicinal glucose) is dextrose monohydrate or grape sugar. Anhydrous dextrose, or dextrose B.P., is also commonly known as glucose. Both the hydrated and the anhydrous sugar, which are, of course, identical in therapeutic effect, I shall refer to as dextrose. The use of the term 'dextrose' rather than 'glucose' is to avoid confusion with the substance known as *liquid glucose*, which is commonly used as an alternative to dextrose for oral administration. Liquid glucose has for many years also been known commercially in this country as glucose. It is formed by the partial hydrolysis of starch and contains, in addition to dextrose itself, maltose, higher oligosaccharides (tri- to hepta-saccharides) and dextrins (octa- and higher saccharides) (Technical Advisory Bureau, Corn Industries Research Foundation, 1956). In this review it will be called liquid glucose.

Fruit sugar will be given its common medical name of fructose, instead of its synonym lævulose, and cane sugar will be called sucrose.

CLINICAL ASPECTS

Dextrose is the chief sugar present in the blood and body tissues generally and it is indeed the common medium of carbohydrate metabolism. Sucrose as such cannot be metabolized in the human body. Given by mouth, it is hydrolysed to dextrose and fructose before being utilized, so that there would thus seem good *a priori* grounds for preferring dextrose as a source of readily ingested and utilized carbohydrate.

In actual fact, the utilization of sucrose makes little call on the digestive processes in the body, but it does depend upon normal intestinal and hepatic function. The absorption of dextrose, however, requires relatively little intermediate metabolism. Rabinowitch (1945) demonstrated that sucrose, when given by mouth, is hydrolysed and absorbed very rapidly and is capable of restoring the blood sugar to normal in diabetics in a state of insulin-induced hypoglycæmia. But he failed to compare the speed of response to sucrose with that of dextrose. Schmidt *et al.* (1935), however, showed that the speed and magnitude of the rise in blood sugar after dextrose were appreciably greater than after sucrose, not only in diabetics but also in patients whose carbohydrate metabolism was normal.

Sweetness.—Another point of great practical importance is the palatability of liquid glucose and dextrose *vis-à-vis* other sugars. Their relative sweetnesses are: sucrose 100, fructose 110, dextrose 74, maltose 33, liquid glucose 23 (Beattie, 1940). If a sugar, orally administered, is to supply 500 to 1000 calories daily to a sick person, the absence of a cloying effect from liquid glucose or dextrose might be crucial. Bennett and Dodds (1925), for instance, stressed the acceptability of liquid glucose, including its non-dextrose constituents which are all rapidly hydrolysed to dextrose by the digestive enzymes.

CLINICAL USES OF DEXTROSE AND LIQUID GLUCOSE

The fact that dextrose is commonly administered by the intravenous route cannot, of course, be taken as establishing any outstanding value for its oral administration. More relevant is the routine use of dextrose solution, by stomach tube, to interrupt insulin-induced coma in schizophrenia and for tube-feeding. In these forms of treatment it would be a mistake to disregard clinical experience leading to preference for dextrose over sucrose.

Of the published reports on the ordinary clinical use of oral dextrose, that by Warner (1934) lists a variety of conditions in which it is of value, including ketosis, post-anæsthetic vomiting and allergic conditions, although here again no specific comparison is made with sucrose. Groen (1937) stresses the absence of strain on digestive and excretory organs associated with dextrose administration, and the fact that no demand is made on the liver before dextrose can be utilized. Taylor (1933) and Martin (1937) also

report favourably on the clinical value of orally administered dextrose. Gamble (1946-47) recommends that the 'survival ration' for life rafts should be 100 g. of dextrose plus 700 ml. of water, on the grounds that the substitution of the dextrose for 100 ml. of water hardly affects water exchange, but does prevent ketosis and protein loss and improves morale. The use of dextrose in convalescence from debilitating diseases, especially those associated with hepatic disorders, is widespread and scarcely open to question.

On the clinically observed value of liquid glucose the most important early report was that of Bennett and Dodds. In a later review, Macnab and Scarlett (1934) emphasize the ease and the value of the oral administration of liquid glucose and dextrose. They point out that the established procedure of intravenous injection of dextrose has caused us to forget that more may be given by mouth as liquid glucose or dextrose, and that at the same time, in suitable circumstances, far more will be assimilated. 'The great value of [dextrose] as a therapeutic agent', they note, 'resides in the fact that it requires no digestive process to prepare it for absorption'.

The value of oral dextrose in children is rarely disputed. Greenwald and Pennell (1930) demonstrated that in new-born infants dextrose produces an earlier, a higher, and a longer sustained blood-sugar level than does sucrose. Infants often develop diarrhœa after sucrose administration, and Becker *et al.* (1954) have demonstrated a similar phenomenon in piglets, which become thin on sucrose as their source of carbohydrate, yet thrive on dextrose.

With this background it becomes clear that one must look to physiological rather than clinical studies for a more radical and objective assessment of the relative merits of dextrose and other sugars.

PHYSIOLOGICAL STUDIES

Absorption rates.—The classical investigation of Cori (1925) revealed that the rates of absorption of dextrose and fructose from the rat intestine were as 100 to 43. This superiority of dextrose over fructose (and presumably over its precursor, sucrose) has been confirmed in rats by various authors, in particular by Hele (1953) who gives a ratio of 100:52. Groen gives the ratio for man as 100:67.

Liver metabolism.—Fructose is almost exclusively metabolized in the liver (Renold and Thorn, 1955). Only after such metabolism does fructose become available for use by the peripheral tissues, and it is the peripheral usage of various sugars that is important in a consideration of their ability to provide energy rapidly and readily. Mendeloff and Weichselbaum (1953) estimate that one hour is needed for 50 per cent. of an administered fructose load to be metabolized by the liver. Beloff-Chain *et al.* (1956a) state that fructose is isomerized in the liver into dextrose before it is oxidized to carbon dioxide, or converted into fatty acids, glycogen and lactate. The mechanism is highly complex and unless all the reactions involved are fully functioning the metabolism of fructose by the liver will be impaired.

Respiratory quotient measurements.—Any case for the more rapid avail-

ability of sucrose and fructose than dextrose which is based on R.Q. (respiratory quotient) measurements is fallacious.

Higgins (1916) found in man that, after sugar ingestion, a more rapid rise in R.Q. occurred with sucrose and fructose than with dextrose. But he is careful to state that 'one is forced however to admit the possibility that the rise is due wholly to the conversion of carbohydrate into fat unaccompanied by an actual combustion of the carbohydrate' and that on the basis of R.Q. measurements fructose 'shows a tendency or preference to change to fat in the body'. Deuel (1927) states that the highest R.Q. 'does not necessarily mean that the greatest amount of carbohydrate is being oxidized when the oxygen absorption is constant'. Campbell and Maltby (1928) attribute the rise in R.Q. after fructose to formation of lactic acid and liberation of carbon dioxide from bicarbonate.

The R.Q. in the intact animal is in fact an over-all expression of its total metabolism and does not allow of conclusions as to the organs mainly involved or details of the metabolic pathways followed. As fructose is mainly metabolized in the liver, where it is converted to dextrose, administration of sucrose or fructose will place on the liver a greater load than that produced by an equal concentration of dextrose, as this will be dispersed among the different body tissues. Hence after sucrose or fructose, diversion of liver metabolism to dextrose oxidation, and concomitantly increased fat synthesis, would be expected.

Peripheral utilization.—It is certain that dextrose is readily and rapidly utilized by peripheral tissues. Of fructose, Renold and Thorn state that it is doubtful whether it is normally utilized at all by the brain, and that its utilization by muscle is slow. Beloff-Chain *et al.* (1955a,b) have demonstrated with C^{14}-labelled sugars that fructose is much more slowly utilized by muscle and brain than is dextrose. In fact, for all practical purposes fructose has to be converted to dextrose in the liver before it can be used by peripheral tissues (Hers, 1955).

Liquid glucose.—Deckard and Corley (1950) provide evidence that dextrins are well utilized and Feyder and Pierce (1935), writing of liquid glucose, say: 'Digestion of the dextrins evidently proceeds at times quite as rapidly as that of sucrose'. Marshall and Womak (1954) showed that dextrin is a more effective sparer of protein than sucrose in rats on a low-nitrogen diet. Beloff-Chain *et al.* (1955a,b; 1956a,b) have shown that one of the main products of dextrose metabolism in muscle, liver and adipose tissue is maltose. Fishman and Sie (1958) and Sie and Fishman (1958) have isolated, from liver, maltose and an ascending series of oligosaccharides similar to that in liquid glucose, and have demonstrated a relationship between liver glycogen and these substances. Thus, unlike sucrose, maltose, and also apparently the oligosaccharides of liquid glucose, are physiological substances in the animal and take part in tissue metabolism. The dextrose component of liquid glucose can be presumed to possess whatever virtues attach to dextrose itself. Finally, Dodds *et al.* (1959) have shown that liquid glucose causes a more rapid rise in blood sugar than does sucrose.

CONCLUSION

Disregarding the purely clinical evidence, which supports the use of dex-

trose over sucrose or fructose, the following points appear to be established:

(a) Dextrose is absorbed from the intestine about twice as fast as fructose.

(b) The initial site of fructose metabolism is the liver where it is converted to dextrose.

(c) Such metabolism takes time and must depend upon the presence of a healthy liver.

(d) Fructose itself provides no energy for the brain or muscles; therefore sucrose is only half as effective as compared with dextrose.

Finally a very relevant point clinically, which is often overlooked, is that sucrose and fructose are each very much sweeter than either dextrose or, especially, liquid glucose.

Present available evidence strongly suggests that dextrose and hence liquid glucose are more readily and rapidly available as sources of energy in man than sucrose or fructose and that the widespread clinical usage of oral dextrose and liquid glucose is well founded.

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PULLED ELBOW

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SUBLUXATION of the radial head, a painful condition of acute onset in children, has received little attention in medical writings. It is not well known and a practitioner confronted with a screaming sufferer will find little guidance from standard textbooks. With but few exceptions no mention is made of this easily cured subluxation. This is a pity because by a simple manipulation of the elbow without anæsthesia, a dramatic cure is instantly obtained and all the fuss associated with a visit to hospital is avoided. Of secondary importance is the enhanced reputation of the doctor, who within seconds frees a 'locked' and acutely painful elbow; tears vanish and all movements are regained without, apparently, any after pain.

In the absence of treatment pain continues for a variable period, often as long as three days. Spontaneous recovery however, is the rule and explains why it is so often unrecognized, a 'bad sprain' being diagnosed instead.

In an excellent account Van Arsdale (1889) gives credit to Hippocrates for first describing the condition. Other satisfactory, and more recent, descriptions have been given by Green and Gay (1954) and by Anderson (1942). Various names have been given to the condition. Pulled elbow is probably the most common, although more correctly it should be called 'traumatic subluxation of the radial head'. It has also been named 'sprung elbow' and 'nursemaid's elbow'.

TYPICAL CASE HISTORY

A child of three, while walking along the pavement holding her mother's hand, suddenly tripped. Her mother, in an effort to prevent her falling, jerked her upright by the arm she was holding. At once the child started to cry, the arm lying limply by her side; attempts to move the elbow were obviously painful.

Examination revealed a frightened child obviously in considerable pain, the site of which appeared to be the right elbow, where all movements were painful. The forearm was held in pronation. No swelling or bruising was seen.

DIFFERENTIAL DIAGNOSIS

The history of a jerking longitudinal pull on the outstretched arm should at once suggest a 'pulled elbow'. The mechanism of injury is unlike that which produces a supracondylar fracture such as follows an awkward fall on to the arm. Examination rules out more serious injury, although in cases of doubt an x-ray should be taken. The limp arm may suggest a brachial plexus injury, but the site of pain and normal sensation with protective muscle spasm

should exclude this. Without doubt the most likely incorrect diagnosis is of 'sprained elbow'.

PATHOLOGY

It has been shown experimentally by Stone (1916) that downward subluxation of the radial head is possible. The fibres of the annular ligament, which are closely applied to the head of the radius, stretch and the 'locking' is

Fig. 1.—The position at the beginning of supination manipulation of a 'pulled elbow'.

FIG. 2.—The completed manipulation.

probably produced by a few of these at the upper end of the ligament slipping over the top of the head. They are then caught between the radius and capitellum and effectively bar reduction. It is evident that no ligament is torn because of the total absence of pain after reduction and the immediate return to full function. In view of the fact that reduction is obtained in most cases by a simple supination movement of the forearm, only rarely by pronation, it is interesting that Stone's experiments showed that subluxation was easier to produce in pronation.

TREATMENT

A confident diagnosis is essential. Should there be doubt, which is unlikely, an x-ray must be taken. In most cases, however, the diagnosis can almost be made on the history alone.

Treatment consists of a gentle manipulation of the elbow to free the

radial head from the few fibres of annular ligament which are caught between it and the capitellum. This is done by supination of the flexed forearm by a gentle but firm movement. The child's hand is held with one hand while at the same time the other thumb exerts pressure on the palpable radial head. There will be no doubt when reduction is obtained for a click will be felt with the thumb and the child will at once regain full and painless movement.

Figures 1 and 2 show the position at the beginning and end of this manœuvre.

DISCUSSION

Undoubtedly the condition is much more common than is generally realized. Plewes (1956) states that it is twice as common as supracondylar fracture of the humerus in children under five. Without manipulative reduction the joint returns slowly to normal within a few days, but the pain during this time fully justifies more active treatment; simple rest in a sling or strapping is not advised. Some children seem particularly prone. I know of a doctor's daughter aged three years, who has been 'cured' no less than fifteen times by manipulation. She now runs to her father when it occurs, holding up her arm to be manipulated!

CONCLUSION

Dramatic cures are seldom produced by any of us. When the opportunity presents we should not be slow to take advantage of it. The sudden relief of pain following successful manipulation of a 'pulled elbow' must be one of the most satisfying minor procedures in medicine.

Pulled elbow is of much greater interest, however, than its disability justifies. It is a minor and completely reversible joint derangement which may well be only one example of other similar derangements occurring elsewhere in the body. The radio-humeral joint is one of the most superficial in the body and yet, when affected in this way, there is no deformity; limitation of movement and pain are the only abnormal signs. X-ray examination is normal. It is possible that other more deeply placed joints may be similarly affected giving rise to pain the cause of which we do not yet know.

The word manipulation frightens some of us. Let us not, however, be too prejudiced lest we miss the opportunity to effect a cure at least as dramatic as any claimed by the osteopath.

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GROWTH, GIRTH AND GRIDS

By S. LEVIN, M.B., M.R.C.P.Ed., D.C.H.
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'Marry, they say my uncle grew so fast
That he could gnaw a crust at two hours old'.
Richard III, 2:4.

The measurement of the physical growth of children seems to be an entrancing occupation. Detailed studies have established the patterns of growth in different types of children, but the value of these studies is not readily evident in everyday practice. Even the bravest pædiatrician will cringe when confronted with a Wetzel grid. Time was when children could be fat, thin, or average. Alas, today that concept is no longer fashionable. Endomorphs, ectomorphs and mesomorphs are *de rigeur*, but hardly useful to tell mothers about. Children have had their heights and weights channelled into percentiles. But again, these are on charts which must be consulted. They are not readily available for use in the commonest pædiatric emergency: when a mother poses an everyday conundrum: 'Doctor, what do you think of my six-year-old girl; she is forty-eight pounds?'.

I suppose every pædiatrician has his favourite formulæ to assist him in judging growth. A common help is derived from the number '7'. At the age of 7, a child should weigh $7 \times 7 = 49$ pounds. He should also be $7 \times 7 = 49$ inches tall. At 7 months he should be about 17 pounds in weight, while the skull circumference should be 17 inches. Another useful number is '4', for at that age a child should be about 40 pounds in weight and about 40 inches in height. And at 4 months he is likely to be about 14 pounds in weight. These are all approximations of course, and are useful in a general way, although in judging one particular child we cannot really subject him to standards set by others. A child is a unique individual; the only grid, the only growth pattern against which he should be measured is his own. His only legitimate standard is himself. Nevertheless, we can still have before us a general scheme to assist us in replying to the commonest query in pædiatrics: 'She is six, and weighs forty-eight pounds. Is that normal?'.

WEIGHT

Nowadays, European infants do not double their birth weight at 5 to 6 months, but more often at 3 to 4 months. A good many infants of 3 months weigh in the region of 13 pounds, at 4 months 14 pounds, and gain about a pound per month thereafter, so that, confronted with a healthy infant of 9 months, we may expect the weight to be in the region of 19 pounds. From the age of a year until 9 years, children gain about 5 pounds per annum. The sex difference is minor. If an arbitrary, but rather low, figure of 20 lb. at the age of a year is taken, then it is clear that:—

At 2 years a child weighs about 25 pounds
,, 3 ,, ,, ,, ,, ,, 30 pounds
,, 4 ,, ,, ,, ,, ,, 35 pounds and so on.

In view of this regularity of weight increment, a simple formula readily suggests itself:—

(Age + 3) × 5 = Expected weight.

e.g.: A child of 7 years should weigh (7 + 3) × 5 = 50 pounds.

It must be stated at once that the figures obtained by means of this formula are rather on the low side. Indeed they tend to follow the 25 percentile pattern for weight: that is, some 75 per cent. of normal children are heavier, some decidedly heavier, than the figures obtained by this formula. But it is probably useful to employ lower figures, so that anxious mothers can be reassured about their thin but healthy offspring.

If desired, weights can be calculated on a 50 percentile basis, in which case the formula is:—

(Age + 4) × 5 = Expected weight.

At about 10 years a child weighs about 70 pounds and gains about 10 pounds a year thereafter.

HEIGHT

This is a simple matter to remember provided four facts are kept in mind:—

(1) At *one year* a child is about 30 *inches* tall.

(2) Thereafter, he (or she) gains about 3 inches per annum until

(3) The age of 8 *years* when the height is about 50 *inches*.

(4) Thereafter, he (or she) gains about 2 inches per annum, until 15 years.

Therefore, in calculating heights in children, 1 to 7 years of age, the formula is:—

(Years over and above the basic standard of 1 year) × 3, adding this product to the standard 30 inches.

i.e.: a child of 5 years should be

$4 \times 3 = 12$

$12 + 30 = 42$ inches tall.

From 8 to 15 years, one must take:—

(Years over and above the basic standard of 8 years) × 2, adding this product to the standard 50 inches.

i.e.: a child of 11 years should be

$3 \times 2 = 6$

$6 + 50 = 56$ inches tall.

Again one must hasten to state that the figures obtained by means of this formula also tend to be on the low side, and generally follow the 25 percentile for height—useful for reassuring mothers of short but healthy children.

TEETH

Dentition varies immensely in normal infants, and whilst an occasional infant, like Richard III, may be born with a tooth, others may not erupt one until the first birthday. The knowledge of the pattern of eruption, however, is not so useful in practice as a knowledge of the total number of milk teeth a baby should have at any given time. Considering that, in general, one new tooth appears every month from about six months to 26 months, we can gain a rough idea of how many milk teeth a baby would ordinarily be expected to have by subtracting 6 from the age in months: e.g. at 16 months, many babies have about ten teeth.

IMMUNIZATION REQUIREMENTS FOR INTERNATIONAL AIR TRAVEL

By P. O. OLIVER, M.B., B.S., D.I.H.
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With the ever-increasing use of international air transport by the general public, the general practitioner is often consulted by his patients for advice on their immunization requirements prior to departure. Much unnecessary inconvenience and annoyance to the intending passenger can be avoided if the correct procedure is carried out.

Passengers arriving in foreign countries with irregular or incomplete health documents may be detained (at their expense) or deported. The World Health Organization has laid down international sanitary regulations which are recognized by most countries in the world. Vaccination is only normally required for smallpox, cholera and yellow fever. Certificates of vaccination against other diseases, e.g. typhoid, are not usually a condition of entry. It is, however, strongly recommended that where travel is through countries in which the water supplies are suspect, T.A.B. inoculation should be given.

CERTIFICATES OF VACCINATION

The international form of certificate of vaccination against smallpox, yellow fever and cholera must be used. There is no international certificate of vaccination against other diseases. Any amendment of the certificate, erasure, or failure to complete any part of it may render it invalid. All certificates must bear the approved stamps prescribed by the Ministry of Health in this country, or, if overseas, by the health administration in which it is issued.

VALIDITY OF CERTIFICATE

Smallpox.—The validity of the certificate shall extend for a period of three years, beginning eight days after the date of a successful primary vaccination or, in the event of a revaccination, on the date of that revaccination. Primary vaccination should always follow yellow fever vaccination. Revaccination should normally be done four days after yellow fever inoculation but, if done first, must precede yellow fever inoculation by seven days.

Cholera.—The validity of the certificate extends for a period of six months, starting six days after the first injection of the vaccine or, in the event of a revaccination within such period of six months, on the date of that revaccination. *Adult dosage:* 1 ml. given subcutaneously. *Children's dosage:* graduated from 0.2 ml. to 0.4 ml. up to the age of 12 years. The vaccine contains not less than 8000 million *V. choleræ* per millilitre.

Yellow fever.—The validity of the certificate extends for a period of six years, beginning ten days after the date of vaccination or, in the event of a

revaccination, from the date of that revaccination. The vaccine used must have been approved by the WHO and the vaccinating centre designated by the health administration for the country in which that Centre is situated. Yellow fever vaccine is not normally available to the general practitioner. Yellow fever vaccination should precede primary vaccination or revaccination against smallpox by at least four days. If given subsequent to primary vaccination there must be an interval of 21 days. *Dose:* 0.5 ml. given subcutaneously (initial and booster). There is no age limit.

In order to avoid misunderstanding as to the date of issue and therefore the period of validity, the day should be written first in Arabic numerals, the month should appear second in letters and the year should come last in Arabic numerals: e.g. 25th December, 1957.

VACCINATION OF CHILDREN

Yellow fever.—It is recommended by the Ministry of Health that children under the age of nine months should not be vaccinated, on account of the risk of encephalitis. When vaccination is requested written consent should be obtained from parents or guardians. In no case should there be less than 21 days between the date of vaccination against smallpox and yellow fever, whichever is given first.

Cholera.—Vaccination is not normally recommended under the age of one year.

Typhoid fever.—Immunization is not normally recommended under the age of one year.

Poliomyelitis.—There should normally be an interval of fourteen days between poliomyelitis vaccination and any other vaccination or inoculation.

REFUSAL OF VACCINATION

Passengers refusing vaccination on medical or religious grounds should be advised of the consequences of such action, which may necessitate their being detained in quarantine, offered vaccination, deported at their expense, or liable to heavy fines. This may incur avoidable delay and serious inconvenience to fellow-passengers. In such cases, the passenger must allow sufficient time for the airline to contact the health authorities of the country of destination so that permission, if granted, can be given for disembarkation. Should this be refused, passengers will not be accepted for travel.

In special circumstances, passengers with irregular health documents may be allowed to travel; in such event they will be required to complete an Irregular Travel Document Notice, absolving the carrier from any responsibility in the event of difficulties encountered en route.

In conclusion, it cannot be too strongly emphasized that in the event of any doubt regarding immunization requirements, it is advisable to contact the airline concerned. They are in possession of up-to-date details of all health formalities likely to be encountered en route and thus may avoid much inconvenience and delay to the prospective traveller.

GENERAL PRACTITIONERS' FORUM

THE TREATMENT OF HYPERTENSION IN GENERAL PRACTICE

By M. L. J. SEGALL, M.B., B.S.
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THE treatment of hypertension falls into the sphere of the general practitioner, as well as the consultant, especially in those patients who have been seen in hospital and have been returned home. There are two factors in the treatment of this condition. The first is to lower the pressure to a level as near normal as is possible, and the second is, of course, to maintain it at that level with as little interference with the patient's way of life as is possible. Not unnaturally, the practitioner is reluctant to use the more 'difficult' drugs available. Injections and drugs which require constant attention from a doctor are not happily acceptable by him. Accordingly, any preparation which can be prescribed and controlled with relatively little trouble will be a useful preparation for general practice.

For some time now I have been using 'mio-pressin' as the drug of choice. This preparation contains the centrally acting agents, Rauwolfia and proveratrine, together with phenoxybenzamine which is a powerful peripheral vasodilator with a long-acting effect. My experience with the use of this drug in a small series of cases may prove of interest to other general practitioners faced with the same problems as myself.

SCOPE OF INVESTIGATION

The patients selected were those exhibiting symptoms due to benign essential hypertension or malignant hypertension. Patients with a recent history of myocardial infarction or cerebral thrombosis were excluded from this series. All other forms of treatment were stopped during this experiment. 'Mio-pressin' (no. 2) capsules were administered the day after all other treatment was stopped, and the initial dose was one capsule three times a day. The patients were seen once a week and the blood pressure recorded sitting, standing and supine. Dosage was increased until the maintenance dose was established. The patients were then seen once a fortnight and blood-pressure recordings taken while sitting and standing. Each capsule of 'mio-pressin' contains *Rauwolfia serpentina* 25 mg., proveratrine 0.2 mg., and phenoxybenzamine 5 mg. No placebos were used.

CASE RECORDS

Case 1.—A male, aged 52, had a long-standing history of secondary (renal) hypertension following removal of a renal calculus seventeen years ago. In March 1955, he had a nephrectomy of his right kidney for a hypernephroma. Postoperatively his

blood pressure was 235/130 mm. Hg sitting, 200/115 mm. Hg supine, and 220/115 mm. Hg standing. He had throbbing headaches and early retinal exudates. He was treated with a ganglion-blocking agent with temporary relief, but ceased treatment because of constipation, dry mouth and abdominal pain. Treatment with 'mio-pressin' was started in October 1957, and he has remained on one capsule thrice daily until the present time. His blood-pressure readings are now: 235/130 to 175/90 mm. Hg sitting, 200/115 to 175/95 mm. Hg supine, and 220/115 to 170/90 mm. Hg standing. There have been no side-effects.

Case 2.—A female, aged 53, came complaining of severe occipital headaches with general malaise in June 1955. Until October 1957 she was treated with sedatives and reserpine, but with no effect. This was followed by attempts to reduce her blood pressure of 240/115 mm. Hg with various ganglion-blocking agents. These had to be stopped because of acute intestinal colic and constipation. She was started on 'mio-pressin' in October 1957, one capsule thrice daily, and her blood pressure changed from 240/115 to 170/90 mm. Hg sitting, 210/110 to 160/85 mm. Hg supine, and 190/105 to 165/95 mm. Hg standing. Her headaches were relieved, her malaise disappeared. There were no side-effects.

Case 3.—A male, aged 66, who has malignant hypertension, first complained of generalized throbbing headaches and cough in 1956. At that time he was found to have a blood pressure of 260/130 mm. Hg, an enlarged left ventricle and bilateral papillœdema with retinal exudates. He was admitted to hospital and treated with a ganglion-blocking agent. He nearly died as a result of paralytic ileus and hypotension. This occurred twice and as a result this therapy was discontinued. He was then in early congestive heart failure, and was therefore digitalized and given a salt-free diet. In October 1957 he was given 'mio-pressin', starting with one capsule thrice daily, increasing in the course of six weeks to two capsules thrice daily. In November 1957, he had what seemed to be an attack of angina pectoris. I then stopped his 'mio-pressin' until January 1958 when I re-started it at a level of one capsule four times daily. In October 1957, his blood pressure was 250/110 mm. Hg sitting, 230/110 mm. Hg supine, and 235/110 mm. Hg standing. In November 1957, at the time he had the attack of angina pectoris, the readings were 230/95, 220/100 and 205/90 mm. Hg, respectively. At the re-start of treatment this year his pressure was 260/110 mm. Hg. It is now 210/105 mm. Hg. The heart failure is reasonably controlled and, apart from dyspnœa on exertion, he is moderately well. His papillœdema has also improved.

Case 4.—A female, aged 64, came complaining of dizziness and nausea on December 27, 1957. The only abnormality found on clinical examination was a blood pressure of 210/100 mm. Hg. This was the same one week later after mild sedation. She started 'mio-pressin', one capsule thrice daily, on January 1, 1958. On January 16 her blood pressure was 150/70 mm. Hg sitting and 130/70 mm. Hg standing. It has remained so, and there are no side-effects. She no longer complains of dizziness or nausea and says that she is really feeling better.

Case 5.—A female, aged 70, complained in October 1957 of headaches, dizziness and general malaise. On October 4, her blood pressure was 200/95 mm. Hg sitting, 200/95 mm. Hg supine and 195/85 mm. Hg standing. On October 15, it was 155/75 mm. Hg sitting and 135/70 mm. Hg standing; when I reduced her initial dose from one capsule thrice daily to one twice daily on December 24, her pressure was 125/70 mm. Hg sitting and 130/70 mm. Hg standing, and I reduced the dose to one capsule daily. On January 28, 1958, her pressure sitting was 120/60 mm. Hg, and I stopped treatment. She says that she feels well for the first time in ages.

Case 6.—A female, aged 58, complained of headaches, nausea and faintness when I saw her on December 3, 1957. Her blood pressure was 225/130 mm. Hg. On December 19, after two weeks' treatment with reserpine, it was 250/150 mm. Hg. On December 20 I started her on a course of 'mio-pressin', one capsule thrice daily. On January 23, 1958, her pressure was 230/120 mm. Hg sitting, and three weeks later it was 200/100 mm. Hg. There has been some improvement in her symptoms

DISCUSSION

Although only six cases are described, and although this small trial made no use of placebos, it is felt that, in view of the type of case treated, the results cannot be ignored. They suggest that many patients in general practice can be treated adequately and satisfactorily with 'mio-pressin'. It is of special value in the treatment of ambulatory hypertensive patients. Clinical trials in general practice are very difficult. I am aware of the criticism that, unless a clinical trial is adequately performed with controls and double-blind experiments, the results are of doubtful value, but I feel that the general practitioner is often obliged to treat his patients without recourse to too much science.

SUMMARY

Details are given of six hypertensive patients treated with 'mio-pressin'.

The results suggest that this drug is of value in the treatment of the ambulatory hypertensive patient.

I wish to thank Dr. J. Johnston of Smith Kline and French Laboratories Limited, who arranged the generous supply of 'mio-pressin' capsules. My thanks are also due to Dr. I. S. Gold for allowing me to treat patients in his care.

SEASICKNESS

By DOUGLAS FAIRLEY, M.B., Ch.B.

Ship's Surgeon, Union Castle Mail Steamship Co., Ltd.

Having retired from more active medical service and occupied myself as a ship's surgeon on large passenger liners, I have had a fair opportunity during the past five years of observing this distressing illness and also the effectiveness of a number of well-advertised remedies for the condition.

SOME CONTRIBUTORY FACTORS

Few people would seem to be completely immune to the malady and practically every 'hardened sailor' I have met has admitted being caught out at some time and not necessarily in an especially severe storm. As with other complaints, the patient's physical condition, as well as his surroundings, affects his susceptibility. Those who have had a long and tiring journey to reach the ship or who have been overdoing things in other ways before sailing or who are emotionally upset are certainly more prone to succumb to the effects of the sea. It is also true that 'anticipation' plays an active part.

Many remedies have been suggested for dealing with the condition and

there is now on the market a long list of 'cures' to choose from. These remedies are almost always in tablet form and many appear to have good results in most cases, but by this time there can hardly be one which has not been tried by some patient without effect and to whom I have later been called to give relief. Some of these tablets contain hyoscine hydrobromide and are marked '*dangerous*' if the recommended dose is exceeded but a patient suffering the agonies of seasickness is just the one most liable to take a chance to see if 'a little extra' will not produce better results. On several occasions I have been called to deal with a patient in a muttering delirium due to an overdose of this drug. Many other tablets are returned undissolved in the vomitus.

METHOD OF TREATMENT

Since 1953, I have adopted the following treatment which so far has been successful in every case—so much so, that I have never been tempted to consider any modification or alternative to it.

If the patient is fit enough to come to see me or is not actively sick when seen, he is given a packet containing one powder and two tablets, together with exact instructions as to how they have to be taken. The tablets are merely two ordinary tablets of promethazine theoclate ('avomine'). The powder contains only the half of one tablet of 'avomine' along with the quarter of one tablet (size 1½ grains [100 mg.]) of butobarbitone, and for the sake of convenience it is known as a 'Pink Powder'. The instructions are:—

Take half a powder
Wait half an hour
Take half a powder
Wait one hour
Take one tablet
Wait two hours
Take one tablet if necessary.

The powder to be taken dry on the tongue and washed down with a little water.

The patient is also told to stop the treatment whenever he feels all right, and at least half of them find the second tablet unnecessary. Many find they do not require anything beyond the second powder.

Should the patient be vomiting when seen, he is given the same packet but the instructions are to take a quarter of one powder every fifteen minutes whether he is sick or not and this is followed by the tablets at intervals of one and two hours respectively. Children are given the treatment in amounts in keeping with their ages.

Prophylactically the treatment is the same packet with instructions to start treatment half-an-hour before the ship sails or whenever nausea threatens.

The rapid results and the unvarying success of this treatment have always astonished me and I have also noticed that, despite later storms, very few patients require a second course. Perhaps it is not irrelevant to point

out that I lay no claim to possessing an impressive 'bedside manner', and I have found the treatment to be just as effective when the packet is handed over by the nursing sister or the hospital attendant.

DISCUSSION

I have not worked out the rationale of the treatment but I suggest it is successful for the following reasons:—

(1) When seasick, the stomach is ready to reject almost anything and a hard and relatively large and slowly absorbed tablet is not welcome. On the other hand, the small amount of powder is much more easily and quickly absorbed and so the stomach is prepared for the reception of the tablet later on.

(2) The very explicit instructions—even to halving the powder instead of giving two separate smaller powders—has probably a beneficial psychological effect.

(3) In the very actively sick cases, it would appear that sufficient powder is absorbed to have a cumulative effect.

(4) The small amount of butobarbitone appears to enhance very effectively the small amount of promethazine theoclate in the powder, without making the patient dopey.

In conclusion, I would add that I have found the 'pink powders' very effective in cases of morning sickness: one-quarter of one powder before rising. Sometimes it may be necessary to repeat this amount half- or three-quarters-of-an-hour later.

PSYCHONEUROSES IN GENERAL PRACTICE

By G. KAGAN, M.D.

Leek, Staffordshire

Tranquillizers have now been used extensively for some years and there appears to be some measure of agreement regarding the indications for the various types. Meprobamate and similar agents are of value in relieving simple anxiety and tension, whilst the phenothiazine group has a place in the treatment of some psychotic disorders and the more intractable neurotic illnesses which have been classified as psychoneuroses (Herman, 1958). Many studies of these drugs have been published but practically all of them deal with hospital populations and do not meet the problems of general practice, despite the fact that patients with neurotic illnesses form the bulk of our daily work (Ferguson, 1956).

SCOPE OF INVESTIGATION

I have recently treated a series of 25 patients suffering from severe functional illness and, in view of the paucity of similar studies, the results may be of interest to other practitioners. The use of tranquillizers of the meprobamate type appears to be well established in general practice but many doctors are unwilling to use the more potent phenothiazines and this series is therefore concerned with this group. Chlorpromazine is the best-known member of this group but it has the disadvantage of producing sedation, which might interfere with the patient's daily life. It also tends to cause hypotension, allergic manifestations, Parkinsonism and jaundice. None of these latter effects is common but supervision of patients is bound to be less stringent in practice as opposed to hospitals and it was therefore decided to use promazine ('sparine') which is reputed to have a lower incidence of these side-effects, and which causes less sedation (Azima and Durost, 1957; Hoch, 1958; Leese, 1957).

Promazine has been used in the treatment of 15 cases of anxiety and nervous debility, five cases of chronic alcoholism or drug addiction, four cases of depression and one case of severe behaviour disorder in a boy of five years.

RESULTS

The dosage varied from 75 to 300 mg. daily with a barbiturate given in addition as a night sedative to 10 of the patients. It was my practice to start treatment with a relatively high dose and to reduce this as improvement took place. When given in this way, it was possible to discontinue treatment in 22 patients after four to twelve weeks, an astonishing degree of improvement and rehabilitation having been achieved. These results were particularly interesting as nine of the patients had not responded previously to treatment with other sedatives or tranquillizing drugs.

The results in four of the alcoholics were excellent, which seemed to be a major therapeutic victory considering the intractable nature of this form of addiction. There have been other reports of the value of promazine in the treatment of alcoholics (Figurelli, 1956; Goldman, 1958; Mitchell, 1956), but these have all been carried out by teams from hospitals or special clinics and it is difficult to evaluate the importance of the drug when so many other factors are operating at the same time. In my small series, however, the alcoholics had no more supervision or psychotherapy than is usually given during surgery hours and the good results with promazine are therefore of greater significance. One chronic alcoholic, however, failed to improve with promazine and in two other cases (anxiety state and behaviour disorder), treatment had to be continued beyond three months to maintain the improved condition.

SOME CASE HISTORIES

Miss M., aged 22, was a mill worker who gave up her job in order to care for her mother who had severe chronic bronchitis and asthma. As her mother's condition

deteriorated she developed an acute anxiety state and became practically incapable of looking after her mother or herself. All kinds of sedatives were given with no appreciable effect. I therefore gave her promazine, 50 mg. thrice daily. During the next three weeks there was a remarkable recovery with no further intense worrying and she appeared to accept the inevitable. The dosage was therefore reduced, and then stopped after four more weeks, and the girl's recovery was maintained even though the mother died soon afterwards.

Miss C., aged 19, became pregnant and developed an acute anxiety state, while her parents, who did not know of the pregnancy, were greatly disturbed by her abnormal behaviour at home. Sedatives caused no change but, when given promazine, 100 mg. twice daily, she rapidly settled down and was ready to accept her position and face the consequences. After a week the dose was reduced to 50 mg. twice daily and after a further three weeks the drug was discontinued. The question still remains whether the amount of promazine is safe in cases of pregnancy.

Mr. S., aged 42, a labourer with a family of five, developed an anxiety state as he thought that he could not earn enough to maintain a decent standard of living for his family. This anxiety state so interfered with his working capacity that he was warned by his employers that he would be sacked if he did not improve. This increased worry caused a further deterioration and he was therefore started on promazine, 100 mg. thrice daily. Within a week there was so marked an improvement that the dose was reduced to 50 mg. four times a day and, after a further four weeks, the man's self-confidence had returned to such an extent that he was actually doing overtime at work and treatment was discontinued without relapse.

Mr. P., aged 36, a married labourer, with four children, was a chronic alcoholic, with anxiety due mainly to lack of money which he needed to look after his large family. He relieved his anxiety by drinking heavily, which increased his financial troubles and set up a vicious circle, resulting in increasing debts and rapid deterioration of the personality. All previous treatment had been useless when promazine was started at a dose of 50 mg. three times daily, without much hope of improvement. After three weeks' treatment he had reduced his drinking to a minimum and was already starting to repay his debts. He has now completely regained his confidence and is to all intents and purposes a new man.

These four case histories are typical of the results obtained with promazine in the treatment of psychoneurotics who take up so much of one's time in general practice, and who are often so difficult to treat.

SUMMARY

(1) Details are given of an investigation of the effect of promazine, and the phenothiazine group of tranquillizers, in 25 cases of psychoneurosis in general practice.

(2) Excellent results were obtained in 22 cases, including four alcoholics.

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CURRENT THERAPEUTICS

CXXXVI.—DEQUALINIUM

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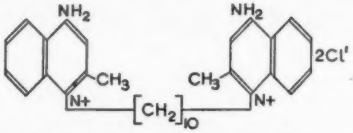
THE discovery and development of antibiotics during the last fifteen years have been accompanied by a loss of interest in other antibacterial agents. This has been especially noticeable in dermatological therapy, although certain older remedies, such as hexachlorophane, hydroxyquinoline and the dyes, have held their own. Quite early in this development three things became obvious. First, that some antibiotics, notably penicillin and chloramphenicol, were rather frequent skin sensitizers; secondly, that they were unable to deal with primary or secondary invasion by yeasts or fungi; thirdly, that *Staphylococcus aureus*—the main cause of skin sepsis—showed a marked liability to become resistant to their action. Most dermatologists have, in fact, counselled caution and have only used locally those antibiotics which were unlikely to be needed for parenteral use, such as neomycin, tyrothricin and framycetin. The proportion of staphylococci resistant to penicillin and the tetracyclines in recent years has aroused anxiety and has led to a belated recognition of the importance of the staphylococcus as potentially more lethal than the streptococcus. This anxiety was fully justified by the mortality from staphylococcal pneumonia in the winter of 1957.

There is every reason therefore to reconsider the value of bactericidal and bacteriostatic agents other than antibiotics. The sulphonamides—overshadowed by the discovery of penicillin—are again coming into vogue for general use; but on the skin they are interdicted because of their high sensitizing rate. Many of the older remedies, such as the mercurials, were liable to the same risk of sensitization, or, like the dyes, were cosmetically unwelcome because of their colour. A fruitful field of antibacterial activity was discovered in the quaternary ammonium compounds. Many of these have been used for years, but have found their main application in the surgical field, and, for various reasons, have not found general favour in dermatological practice. A relatively new member of this group, dequalinium, has recently been introduced for the treatment of skin, oral and vaginal sepsis and has appeared, in preliminary trials, to be highly effective *in vitro* and to possess considerable value *in vivo*.

CHEMISTRY AND PHARMACOLOGY

Dequalinium ('dequadin') is decamethylene-*bis*-(4-aminoquinaldinium). It belongs to the group of polymethylene-*bis*-iso-quinolinium salts, which

show a high degree of antimicrobial activity. 'Dequadin' is the chloride salt of dequalinium and has the following structural formula:—



In laboratory testing dequalinium was found to have extremely low toxicity and no irritant effect on the mucous membranes and skin of mice and rabbits, with a wide antimicrobial activity *in vitro*, inhibiting the growth of gram-positive and gram-negative bacteria, *Treponema vincenti*, *Candida albicans* and certain pathogenic fungi, notably *Trichophyton mentagrophytes*, *T. rubrum* and *T. verrucosum*. Moreover it possesses the valuable property—not shared by certain other antibacterial agents with which it was compared—of not being inhibited in the presence of serum. Nor has it any detergent action on the skin.

CLINICAL EFFECTS

Under clinical conditions, dequalinium appears to bear out its experimental promise in regard to *Staphylococcus aureus* and the hæmolytic streptococcus, having a powerful inhibitory effect on these pathogens. This is much less marked in the case of gram-negative organisms which may, in fact, emerge after pyococcal organisms have been eradicated, particularly in leg ulcers and infections of the vulva, groins and perianal areas, where the bacterial flora is often mixed. On the other hand, the eradication of hæmolytic streptococci, staphylococci and yeasts may bring about considerable improvement of the condition even though gram-negative organisms continue to be recovered from skin swabs. *Candida albicans* responds well, although treatment often needs to be continued for several weeks. In fungous infections the effect of dequalinium is generally less dramatic.

Dequalinium has been used by Coles *et al.* (1958) in 241 patients and by both Coles (1959a) and myself independently in several hundred further patients. No toxic effects have occurred and the substance is well tolerated on eczematous and infants' skins, and on the mucous membranes of the nostrils, mouth and vagina. Three cases of sensitization occurred in the series of 241 cases. This represents an incidence of 1.2 per cent. Since then I have encountered one further case in which the sensitivity was likely, but unproven, giving a total incidence of less than 1 per cent. among the cases so far treated by us. In the three proved cases, the sensitization was found to be due to dequalinium itself and not to the base. Positive patch tests were obtained in each case.

PREPARATIONS

Dequalinium is available in the following forms:—

A *cream*, containing 0.4 per cent. dequalinium chloride. This is the most convenient form of application for infective conditions of the skin. It may also be used in the nostrils and vagina.

A *paint*, containing 0.5 per cent. dequalinium in a propylene glycol base. This is of

particular value on the hairy parts, such as the scalp, and in the nostrils, external auditory meati and vagina.

Lozenges, containing 0.25 mg. of dequalinium. These are dissolved in the mouth every two to six hours in cases of oral and throat infections.

Vaginal pessaries, containing 10 mg. of dequalinium in each pessary. These should be inserted once or twice a day for the necessary period to eradicate the infection.

'*Dequaspon*' is a preparation of 0.1 per cent. dequalinium chloride in gelatin sponge B.P.C. It is intended specifically for dental use in tooth sockets after extraction.

'*Dequadin nonad tulle*', containing 0.4 per cent. of dequalinium chloride in tulle gras. I have no personal experience of this preparation, but Robba (1958) reports on its efficacy as a local dressing for plastic operations and leg ulcers. It might also prove a useful preparation after such manœuvres as surgical planing.

A *cream* combining dequalinium with 0.25 per cent. prednisolone. Coles has had considerable experience of this preparation and has found the combination effective in allaying the itching and inflammatory reaction associated with infective eczematous conditions, in which he found it to be more effective than the cream alone.

A '*hæmostatic wound powder*', containing 0.1 per cent. dequalinium and 0.2 per cent. hexachlorophane in a sterile starch base, is undergoing experimental trials. It is not yet generally available. Coles (1959a) and I have found it of value as a prophylactic dusting powder for intertrigo, staphylococcal axillary infection and as a cord dressing powder, although its main value is obviously surgical. It should prove useful as a non-antibiotic dressing for wounds, abrasions and burns. It may also be found to be a satisfactory preparation in some plastic surgical procedures. Further trials are needed to evaluate this preparation, the only disadvantage of which seems to be the slight grittiness of starch as compared with the traditional talc.

DERMATOLOGICAL INDICATIONS

The main indications are pyococcal infections of the skin (impetigo, furunculosis), infected and infective eczematous conditions, intertrigo and mixed monilial and staphylococcal infections, staphylococcal infections of the newborn, chronic paronychia and angular cheilitis. Coles *et al.* (1958) found that 69 of 84 cases of such pyococcal skin infections were cured or markedly improved with its use. They also made a comparison between the effects of dequalinium and standard treatment by antibiotics or dyes in 66 patients and found no difference between the two in purely pyococcal conditions, whilst there was some advantage in using dequalinium in eczematized infective lesions and in mixed pyococcal and monilial infections.

Impetigo.—In bullous staphylococcal infections, dequalinium compounds can usually be relied on to bring about a cure within a week or ten days. This is similar to that expected with antibiotics. The colourless nature of the preparation and its relative cheapness are an advantage in treatment.

Neonatal staphylococcal infections.—Coles *et al.* (1958) found it of particular value in these infections and it has been used with confidence by Coles (1959b) since these trials were published. The avoidance of the creation of antibiotic resistance is of considerable importance in this group, as such resistant strains can persist for long periods.

Chronic furunculosis.—Here the problem is far more complex. Nasal disinfection is needed, but even if this source of staphylococcal reinfection is obliterated, clothing, blankets and other household contacts (including other members of the family) may convey further infection. It is of advantage

to use an antibacterial compound, such as dequalinium, in an attempt to disinfect the nostrils of all close members of the family concerned. In the form of the paint it is valuable for boils on hairy parts or for protecting a wide area, such as the buttocks or neck, from further boils.

Intertrigo.—Here there is often a mixed infection of staphylococci, monilia, *Proteus vulgaris* or *E. coli.* Although the dyes are pre-eminently useful, they are difficult to apply in outpatient practice. Dequalinium in the form of a paint, with linen strips to separate the folds, has proved useful although it will not eliminate the gram-negative organisms; but these often seem to be saprophytic without any direct relation to the inflammatory reaction that constitutes the intertrigo.

Chronic paronychia.—The infection here is either staphylococcal or monilial. Cure depends upon control of many factors, including avoidance of trauma, wet work and contact with alkalis. Dequalinium has been well tolerated in a number of cases treated and appears to be at least as useful as other standard measures employed in this condition. The treatment must be carried out thoroughly, the paint being applied under the affected nail fold carefully twice a day and the finger kept dry.

Infected eczema and infectious eczematoid dermatitis.—The *Staphylococcus aureus* is almost always present although beta-hæmolytic streptococci are also often involved. Dequalinium in the form of a cream or paint may be applied without fear of increasing the eczematous reaction, but other general measures are usually necessary to bring about a cure.

Fungous infections.—There have been no reports of any appreciable number of cases of fungous infection treated with dequalinium. Although it was shown *in vitro* to be fungicidal, particularly against members of the trichophyton species, it seems unlikely that it will be of great value in these conditions, since other excellent fungicides are available. It is, however, a satisfactory alternative to the dyes in the treatment of secondarily infected fungous infections of the feet.

Nasal disinfection.—The importance of reducing the staphylococcal flora of the anterior nares in various infective conditions of the skin is now well recognized. It is accepted practice to sterilize the nostrils at the same time as any attack is made on chronic or relapsing staphylococcal infection of the skin. Gillespie (1957) and others have discussed this fully and shown the feasibility of the manœuvre. Reinfection obviously occurs easily after stopping treatment, but this may be less massive or of a more sensitive or less virulent strain. Disinfection often needs three or four weeks' treatment. In the original series of cases, 15 out of 27 nostrils were sterile at the end of one week's treatment and 21 out of 27 at the end of four weeks. In patients with furunculosis disinfection is more difficult. Copeman (1958) has emphasized the importance of this approach in patients with styes. He found that 94 per cent. of patients with persistent styes carried a coagulase-positive *Staphylococcus aureus* in their nostrils, compared with 44 per cent. of those with sporadic styes.

DENTAL AND ORAL USES

Tooth socket dressing.—Trotter (1956) found dequalinium chloride in gelatin sponge an effective agent in preventing sepsis in tooth sockets.

Thrush.—In the form of lozenges, and, if necessary, paint, dequalinium appears to be highly effective, at any rate against mild degrees of thrush. I have only had the opportunity to use it in a few cases but in these it has been successful.

Black hairy tongue.—Whether this curious condition is primarily due to invasion by yeasts or to a disturbance of a keratolytic enzyme remains in doubt. It may last many years before disappearing spontaneously and is subject to periodic exacerbations and partial remissions. In only two out of eight cases which I have treated did clearance follow the use of dequalinium lozenges, but the tongue was not scraped at the same time and this may well be necessary, according to Banks and Stockdale (1959).

Pharyngitis and tonsillitis.—Frequent use of the lozenges is said by Trotter (1956) to relieve symptoms rapidly and to bring about clinical cure in 70 per cent. of cases in three days. No bacteriological control was undertaken.

Vincent's infection.—Little work appears to have been done on this, but Trotter (1956) mentioned it as one of the oral conditions responding to dequalinium.

GENITO-URINARY USES

Trichomonal infections.—Levinson (1959) has reported favourably on the use of dequalinium pessaries in vaginal moniliasis and trichomoniasis, with a rapid relief of symptoms. One pessary was inserted nightly for a month and ensured restitution of the normal flora. Roddie (1958), prescribing a pessary twice a day, found that 25 out of 35 patients were improved or cured in a month, and 27 out of 30 in six weeks. In 'non-specific vaginitis' (leucorrhœa associated with a mixed flora of low pathogenicity), similar results were obtained more quickly. Neither author found any evidence of irritation or sensitization. Catterall (1958), in a preliminary trial of dequalinium in the treatment of trichomonal urethritis in the male, has obtained encouraging results, using 1 per cent. solution for daily posterior irrigation over a period of a week.

Other infections in the genital area.—Any primary infective lesion about the genital region is likely to be complicated by secondary gram-negative organisms or yeasts. In this area therefore antibiotics in general have the lowest effective spectrum of action; the dyes still hold an important place; dequalinium falls between the two. A small series of cases investigated bacteriologically shows it to be effective in eliminating gram-positive organisms and yeasts.

MYASTHENIA GRAVIS

An interesting and unforeseen effect of dequalinium has recently been reported by Graham and Grant (1959).

A woman of 62, suffering from myasthenia gravis, developed an intercurrent pharyngitis. She was treated with dequalinium lozenges every three hours. In

twenty-four hours a considerable improvement had occurred in the myasthenia and this recurred on three subsequent 'blind' controlled trials.

The heterocyclic polymethylene bis-quaternary ammonium salts have a neuromuscular blocking action and their antibacterial action was originally found incidentally: Babbs *et al.* (1956), for instance, found that mice were paralysed when dequalinium was given intravenously. Its mode of action in myasthenia gravis, however, remains unexplained and must await further confirmation and study.

DISCUSSION

There is no perfect skin antiseptic. Dequalinium is an antibacterial agent with several advantages: it is not inhibited—as are some other quaternary ammonium salts—by serum; it is effective *in vivo* against the staphylococcus, streptococcus and *Candida albicans*; it is available in many forms, for use on the skin and mucous membranes; and it is well tolerated on abraded or eczematous surfaces. Moreover, it does not create resistance, and is cosmetically acceptable. Few large-scale trials, however, have yet taken place to assess its value. The largest are those of Trotter (1956) and of Coles *et al.* (1958). Both of these are favourable, but it appears that its action is sometimes not as rapid as that of antibiotics and that it is not wholly effective against all staphylococcal, streptococcal and *C. albicans* infections of the skin. Further, gram-negative organisms may emerge after the destruction of pyococcal organisms, particularly about the groins and anus, and on leg ulcers and in ears, but these are not often of great importance. The main value of this particular agent may well be in the possibility it opens up of providing an effective non-antibiotic agent for skin use in general practice.

Whether sensitization reactions—at present low—will increase with the further use of dequalinium compounds remains to be seen. It was two or three years before those due to penicillin became apparent; each drug has its day. If it should pass the level of 3 per cent. one would begin to feel anxious about its continued use and would seek another remedy. At present, however, it appears to be a valuable addition to the practitioner's stock of remedies against pyococcal and monilial infections of the skin as well as a number of common, troublesome conditions affecting the mucous membranes of the mouth and vagina.

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PRACTICAL DIETETICS

IV.—DIETS IN RENAL DISEASE

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DIETARY modifications can be of value in the treatment of certain types of renal disease. The results of pathological conditions can be modified and the physiological normal can be more nearly approached, when the diet is altered to counteract the abnormalities brought about by an inflamed or poorly functioning kidney. On the other hand, such modifications must never be allowed to compromise the general nutrition of the patient. The diet must therefore have regard to the maintenance of nutritional status, it must be constructed in accordance with the patient's food habits and be modified only in so far as this is really necessary. This article gives an account of the conditions in which dietary treatment is indicated, together with detailed menus to show simply what these diets mean in terms of food.

ACUTE NEPHRITIS

During the acute inflammatory stage normal nutrition can be temporarily disregarded, and dietary modifications be aimed at reducing the load on the kidneys as much as possible. A restricted fluid diet containing little or no protein and sodium is given to counteract the oliguria, proteinuria and œdema.

Stage I.—At first the diet consists of frequent small feeds of sweetened fruit juice:—

e.g. 1 pint (570 ml.) fruit juice
3 ounces (85 g.) lactose, glucose or sucrose

Lactose, although of equal caloric value, is less sweet than glucose or sucrose and is preferable if vomiting occurs. If vomiting is severe, it may even be necessary to give a 20 per cent. lactose solution intravenously or by tube. During the oliguric phase the liquid is limited to approximately 500 ml. plus the volume equal to the amount of urine passed in the previous twenty-four hours.

Stage II.—This simple non-protein diet should not be continued for any great length of time, and as soon as the proteinuria is reduced the diet should be increased by the addition of milk, bread and butter and fruit. As the œdema abates and the urine volume becomes more normal the liquid and sodium restrictions can be relaxed simultaneously.

Stage III.—A semi-solid diet with moderate protein content and without sodium restriction, such as outlined in table I, is indicated at this stage.

Stage IV.—As kidney function improves, dietary restrictions are gradually reduced until by the time recovery is complete the diet is well balanced and normal for the individual in question.

THE NEPHROTIC SYNDROME

The aim of the diet in this syndrome is twofold. In the first place a high-protein diet is necessary to sustain the level of serum albumin and prevent

	Ounces or fluid ounces	Grammes or millilitres (approx.)		Protein (grammes)	Calories
Breakfast:			One egg, boiled or scrambled	7	92
	2	56	Milk in tea	2	38
	1	28	Bread	2	75
	¼	7	Butter	—	56
	½	14	Marmalade	—	37
Mid-morning:	8	227	Orange juice	—	88
Dinner:	1	28	Mince	7	100
	3	85	Mashed potatoes	1.5	102
	4	113	Cauliflower	1.2	9
	5	142	Baked apple	0.5	55
			Sugar from allowance	—	—
Tea:	2	56	Milk in tea	2	38
	1	28	Bread	2	75
	¼	7	Butter	—	56
	½	14	Jam	—	37
Supper:	3	85	Baked fish	18	100
	3	85	Mashed potatoes	1.5	102
	4	113	Vegetables (average)	1	20
	7	200	Milk } as pudding	6.3	133
	½	14	Cereal } as pudding	0.9	51
Bedtime:	8	227	Orange juice	—	88
Daily:	2	56	Sugar	—	224
	2	56	Butter	0.2	452
				53.1	2,028

TABLE I.—Semi-solid, moderate-protein diet for use in the treatment of acute nephritis, stage III.

the negative nitrogen balance that would otherwise occur as a result of the excessive loss of protein in the urine. If proteinuria is continuous, however, an excessively high-protein diet is of no particular advantage, and an intake sufficient to prevent the negative nitrogen balance is adequate. The intake should be equal to the sum of the protein needs of the patient plus that lost in the urine. Secondly, by restricting the salt content of the diet the volume of interstitial fluid is reduced. The degree of restriction necessary is proportional to the amount of œdema present and ranges from 0.5 to 5 g. of sodium chloride daily. It is advisable not to restrict the salt unnecessarily since the diet is apt to be unpopular with the patient, and if salt restriction

is carried too far it may so interfere with normal nutrition that more harm than good will be done. The necessity for a low-salt diet is not immediately obvious to the patient, as it might be with a peptic ulcer or reducing diet, and explanations and encouragement are essential.

Table II gives details of a high-protein, low-salt diet supplying 2000

	Ounces or fluid ounces	Grammes or millilitres (approx.)		Protein (grammes)	Sodium (milligrammes)	Calories
Breakfast:	1	28	Shredded Wheat, Puffed Wheat or unsalted porridge	3	6	100
			One egg or alternative	7	76.8	92
	1	28	Salt-free bread	2	2.5	75
	½	7	Unsalted butter or margarine	—	—	56
	½	14	Marmalade	—	2.6	37
			Tea or coffee with milk from allowance			
Mid-morning:			Coffee with Edosol-Casilan mixture from allowance			
Dinner:	2	56	Meat or alternative (average)	14	40	200
	4	113	Potatoes	2	4	92
	4	113	Vegetables (average)	1	20	20
	7	200	Edosol-Casilan mixture as pudding	0.9	0.9	51
	½	14	Cereal as pudding			
	4	113	Fruit (average)	—	5	40
Tea:			Tea with milk from allowance			
	2	56	Salt-free bread	4	5	150
	½	14	Unsalted butter or margarine	—	—	112
	½	14	Jam	—	2.2	37
Supper:	2	56	Meat or alternative (average)	14	40	200
			Salad	—	5	—
	4	113	Fruit (average)	—	5	40
	7	200	Edosol-Casilan mixture as pudding	0.9	0.9	51
	½	14	Cereal as pudding			
Bedtime:			Coffee with Edosol-Casilan mixture from allowance			
Daily:	10 (½ pint)	280	Milk	9	142	190
	2½	70	Edosol Made up to 1 pint (570 ml.) with water	18	20	360
	1½	42	Casilan Made up to 1 pint (570 ml.) with water	40	—	160
				115.8	377.9	2,063

TABLE II.—High-protein, low-salt diet for use in treatment of the nephrotic syndrome.

calories and suitable for this condition. To increase the protein and decrease the salt content further the Edosol and Casilan mixture could be increased at the expense of the meat and eggs.

PLANNING THE LOW-SALT DIET

When deciding what degree of restriction is necessary it must be remembered that special bread and milk are necessary to ensure a level of sodium chloride below 1 g. daily. An intake of 5 g. of sodium chloride can be obtained by avoiding salt in the cooking and at table, all very salty foods, and by restricting milk to half-a-pint (280 ml.) daily. When the degree of restriction is known, a diet is planned which, so far as possible, is within the framework of the patient's previous food habits.

MANAGEMENT OF THE LOW-SALT DIET

In all low-salt diets the following foods must be avoided:—

(1) No salt must be used at table or in the cooking of food.
(2) All foods high in sodium are forbidden. These include:—
Cheese, bacon, ham, meat pies, sausages.
Tinned meats, soups and fish.
Salted fish and cheese.
Chocolate and ice cream.
Soup, rennet.
Oxo, Bovril, Marmite.
Baking powder and sodium bicarbonate.
Bottled sauces and mayonnaise.

When severe restriction is indicated, low-salt bread and milk can be substituted for the ordinary varieties. A special arrangement can usually be made with the local baker to bake bread free of salt. This can make a difference of 100 mg. of sodium per ounce (28 g.) of bread. Low-salt bread stales quickly, and is tastier if toasted. Alternatively, if the bread is made at home certain additions can make it more appetizing. The following is a suggested recipe:—

Orange Bread
1 large thick-skinned orange
3 ounces (85 g.) sugar
3 ounces (85 g.) butter (unsalted)
½ ounce (14 g.) yeast
1 egg
1 pound (450 g.) flour

Method.—Cut orange in quarters, remove white core and mince rest of orange—there should be one cup of pulp and juice. Add to sugar and butter and bring to the boil. Cool until lukewarm, whisk yeast in the liquid, add egg and flour to give a stiff dough. Knead; prove; knead lightly, shape into two loaves and place in greased bread tins. Prove: bake at 375° F. (190° C.). Brush loaves with melted fat after removing from the oven.

Ordinary milk should be omitted and Edosol used in its place. This is a low-sodium milk powder manufactured by the Trufood Creameries, Wrenbury, Cheshire, and is prescribable on form E.C.10. The powder is

similar in composition to cow's milk apart from its sodium content which, at 20 mg. of sodium per pint (570 ml.), compares favourably with the 284 mg. of sodium in one pint (570 ml.) of cow's milk.

Further aids in the management of a low-salt diet are as follows:—

(a) Casilan is usually included when protein is also a necessary factor.

	Ounces or fluid ounces	Grammes or millilitres (approx.)		Protein (grammes) approx.
Breakfast:			One egg or equivalent	7
	3	85	Bread	7
			Butter	—
			Marmalade	—
			Fruit, tinned, raw or stewed	—
Mid-morning:			Fruit juice	—
Dinner:			One egg or equivalent	7
			Vegetables (no pulses)	—
	2	56	Potatoes	1
			Fruit	—
Tea:			Tea with milk from allowance	—
	3	85	Bread or special biscuit or cake	7
			Jam	—
Supper:			One egg or equivalent	7
			Vegetables or salad	—
			Fruit	—
Daily:	4	113	Milk	4
				40

TABLE III.—Low-protein diet for use in the treatment of uræmia.

This product from Glaxo Laboratories is 90 per cent. protein and virtually sodium-free.

(b) A baking powder containing a potassium salt instead of a sodium salt must be used in cooking. The following recipe is used in the proportions of one teaspoonful to 1 pound (450 g.) of flour:—

Baking powder

Cornflour	1 ounce (28 g.)
Potassium bicarbonate	1½ ounces (42 g.)
Tartaric acid	¼ ounce (7 g.)
Potassium bitartrate	2 ounces (56 g.)

(c) Unsalted butter and margarine are practically salt-free whereas ordinary butter contains 63 mg. of sodium per ounce (28 g.), and margarine may have 90 mg. of sodium per ounce.

(d) An unsalted yeast extract, made by Marmite, is useful for stews and gravies.

(e) Dietade foods produce a low-sodium ketchup, mayonnaise and tinned peas and baked beans—foods which normally would be forbidden on the low-salt diet.

(f) The diet tends to be monotonous if alternate flavours are not used. Ingenuity is required in the kitchen and new flavours must be given a trial. The following may be used:—

Vinegar, herbs, bayleaves, pepper, garlic, curry, and onions. Lemon, mint sauce, mustard and parsley. Sage, ginger, nutmeg, cloves, and wine.

The following is a list of foods and flavours which blend well together:—

Beef:	onion, bayleaf, mustard
Pork:	garlic, sage, spiced apple sauce
Lamb:	mint
Chicken:	mushrooms, parsley, sage stuffing
Fish:	vinegar, lemon juice
Cabbage:	unsalted butter, lemon and sugar
Carrots:	unsalted butter, sugar and parsley
Peas:	mint, sugar
Potatoes:	fried with unsalted fat, parsley, mace
Tomatoes:	basil, pepper

URÆMIA

When renal failure prevents the excretion of nitrogenous waste products a low-protein diet is given. Table III gives details of a 40-g. protein diet. Extra calories can be obtained from fats, sugar, glucose, jams, marmalade, honey, and boiled sweets. Cream is not allowed as it contains 0.5 g. of protein per ounce (28 g.). The diet can be varied by including foods equivalent in protein value to one egg. These include:—

1 ounce (28 g.)	Cheese
1 ounce (28 g.)	Meat (average)
1 ounce (28 g.)	Poultry
1 ounce (28 g.)	Bacon
1½ ounces (42 g.)	Fish
3 ounces (85 ml.)	Evaporated or condensed milk
7 ounces (200 ml.)	Fresh milk
3 ounces (85 g.)	White bread
3 ounces (85 g.)	Cornflakes
2 ounces (56 g.)	Flour
2 ounces (56 g.)	Oatmeal
4 ounces (113 g.)	Plain chocolate
4 ounces (113 g.)	Peas
1 ounce (28 g.)	Butter beans
1 ounce (28 g.)	Haricot beans

CONCLUSION

Dietary control is of value in the treatment of renal diseases. Examples of diets for various conditions are given. It is emphasized that in all long-term cases normal nutritional needs must not be disregarded.

REVISION CORNER

THE EMERGENCY TREATMENT OF DENTAL HÆMORRHAGE

It is the unfortunate lot of many medical practitioners and hospital house officers that they are often called upon to cope with a patient suffering from post-dental-extraction hæmorrhage. Anyone who has been confronted with this problem is only too well acquainted with the picture of a patient presenting, usually at night, with a mass of blood-stained handkerchieves, blood-soaked shirt collar and an entourage of anxious relatives. The history is usually of a dental extraction or extractions earlier the same day; not infrequently, there is no history of previous bleeding following minor surgery and the patient is at a loss to account for his bleeding.

ARRESTING THE HÆMORRHAGE

The first approach to the matter should be aimed at the early arrest of the hæmorrhage. The patient's description of the estimated blood loss is rarely of any value since few patients realize that every mouthful of 'blood' spat out contains varying amounts of saliva and that what appears to be a cupful of blood to the patient may, in fact, include half-a-cupful of saliva. Nevertheless, several blood-stained garments should not be lightly disregarded.

The first essential is to obtain a clear mouth to facilitate a thorough inspection. A brief rinse followed by manual removal of loose blood clots will reveal the site of the bleeding. Quite often, it is assumed that because there is a socket present the bleeding necessarily is stemming from this source. This is not always the case and the soft tissues about the socket should be carefully examined: an injudicious tear of the oral mucosa, especially that adjacent to the floor of the mouth, is one of the commonest causes of the most intractable oral hæmorrhages. If this lesion can be excluded, the cause lies in the bony socket or its gingival covering.

The introduction of the absorbable hæmostatic sponges has provided a most efficacious means of coping with most bleeding sockets.

A small piece (about the size of a thumb-nail) of such an agent as 'sterispon' or 'oxycel' should be placed in the socket and held in position by asking the patient to bite firmly on a gauze swab placed over the offending socket. The strain of active closure of the jaws for twenty minutes or so can be relieved by applying a crêpe bandage around the head, from vertex to chin.

This procedure will arrest most dental hæmorrhages. Should the bleeding continue, it is probably due to ineffective application of pressure to the soft tissues of the wound. This can be overcome by the use of a 'stent' splint.

This is easily constructed by placing a small piece of dental 'stent' (about the size of a small finger) in boiling water; when it is soft, it is moulded over the socket so as to enclose the area completely, and held tightly in position for two minutes, when it will have set to form a rigid splint.

Very little experience is required to handle this material and a small slab of it kept in the surgery may save the loss of an appreciable amount of blood.

Pre-packing of the socket with absorbable sponge will further ensure the chances of success.

Time-honoured medicaments such as adrenaline and ferric perchloride have little place in the management of dental hæmorrhage since they tend to be diluted and washed out by the actively bleeding socket before they have had a chance to exert their action. It should be remembered that packing a socket with cotton-wool, whilst often arresting the hæmorrhage, will inevitably result in a bloodless, 'dry' socket when removed, such a socket being extremely painful and slow to heal. Suturing the gum flaps on either side of the socket is a useful treatment but a difficult operation for those not accustomed to working in the mouth.

Delayed hæmorrhage.—Hæmorrhage occurring a few days after extraction is probably due to secondary infection of the socket, and local measures will be of no avail unless the infection is treated. The administration of penicillin will deal with most oral infections, but in severe hæmorrhages this should be combined with the local measures already outlined.

PROLONGED HÆMORRHAGE

Bleeding which persists in spite of all attempts to arrest it is best treated as internal, inaccessible hæmorrhage, for a patient ejecting copious amounts of blood via the mouth might just as well be vomiting blood originating from a bleeding gastro-intestinal ulcer. A small dose of morphine should be administered, the patient placed on his back with the head raised up on a pillow, and turned to one side to allow the blood to leave the mouth rather than be swallowed. The pulse and blood pressure must be recorded periodically, and the patient's blood grouped and cross-matched in preparation for a transfusion, should this become necessary. Dental hæmorrhage is sometimes regarded too lightly—an incessant ooze throughout the night can render a patient severely anæmic.

Patients sustaining a profuse post-extraction hæmorrhage should be submitted to blood examination, including a cell and platelet count, hæmoglobin estimation and bleeding and clotting times, for a hæmorrhagic or leukæmic disease not infrequently asserts itself for the first time in the form of dental hæmorrhage. The old belief that the hypertensive patient benefits from a brisk dental bleed should be deprecated, for blood-letting by means of traumatic hæmorrhage is not easily amenable to control, and the fall in blood pressure is no indication of the degree of anæmia that may be impending. Even severely hypertensive subjects are best treated by arresting the bleeding, and the treatment of the hypertension left to less dramatic measures.

HÆMOPHILIA

One word of caution should be mentioned regarding the true hæmophiliac. The application of great pressure to a bleeding socket in such a subject will merely result in sub-mucosal hæmatomas, which, in the mouth, can have serious consequences, since the hæmatoma may track down the tissue

planes of the neck and cause respiratory embarrassment by pressure on the trachea. Any suspicion of spreading hæmatomas in the soft tissues of the mouth should alert one to the possibility of the underlying blood disease and the patient should be admitted to hospital for investigation and transfusion.

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BOXING INJURIES

BOXING injuries rank eighth in frequency among sports injuries. In 4,350 contests held under the auspices of the London Amateur Boxing Association in the season 1957-1958, 137 injuries were reported. There were 42 cuts in the region of the eye, six of the lips, three of the forehead, two of the ears, three of the mouth and one of the nose. There were three fractured metacarpals, two fractured noses, 60 knock-outs and nine cases of amnesia without loss of consciousness. In addition, there were five sprains involving the metacarpo-phalangeal joint of the thumb or inter-phalangeal joints of the fingers.

EPISTAXIS

The commonest boxing injury is simple nose bleeding. This can easily be stopped during rounds by sitting the boxer upright, pinching the nares and applying a cold sponge. If the bleeding persists after the bout, plugging with adrenaline gauze or adrenaline-soaked cotton-wool usually stops it. The plugging should be removed after twelve hours. More severe bleeding may indicate obvious damage to the septum and this will mean early removal to hospital where the bones can be manipulated with Walsham's forceps before bleeding and œdema cause obstruction.

DEFLECTED SEPTUM AND FRACTURED NASAL BONES

Deflected septum.—A cartilage injury is relatively common and may cause considerable nasal obstruction; damage to the ethmoid or vomer is rare. Manipulation should be done within ten days. Often when œdema subsides manipulation is found to be unnecessary. Boxing can be resumed after two to three months. If manipulation is unsuccessful a submucous resection will be necessary; this means the abandonment of boxing, as does remodelling of nasal contours.

Fractured nasal bones.—This is rare: two cases in 4,350 contests. Elevation by Walsham's forceps is indicated; boxing should be forbidden for three months.

ABRASIONS AND LACERATIONS

Abrasions.—These are common on the face and skull. Bleeding should be stopped by pressure: fibrin foam applied with pressure on a pad of gauze or cotton-wool is usually successful in obstinate cases. Bathing of the wound with warm saline is followed by the application of cetrimide (1 per cent.)

and light dusting with sulphathiazole powder. Antibiotics should not be applied locally as they may cause sensitivity reactions.

Lacerations.—When the wound is dry and has been cleaned as indicated above, it should be sutured to ensure sounder and more rapid healing as well as less disfigurement. The so-called 'cut eye' is usually situated over the supraorbital ridge or in the upper eyelid. In the scalp, if the wound has gone right through the thickness of the skin, suturing is essential, coapting the whole of the cut surfaces. Elsewhere, if there is no contusion and no dead space in the depths, it can be closed by approximating the skin edges. Von Horff's clips are an easy and quick way of getting the skin edges together. A gauze dressing with collodion is applied and the clips are removed after a few days. Small dry wounds can be held together and sealed with a plastic material, e.g. 'nobecutane'. The most suitable suture material is silk thread. This can be obtained already threaded into small curved needles in sterile containers, and a Gillies needle-holder is most useful. Sutures should be removed not later than after five days. The sutures can also be applied through a fine hypodermic needle. Dumb-bell plaster strips applied at right-angles to the wound are also useful. Boxing should be prohibited for at least four weeks.

HÆMATOMAS

The common or garden 'black-eye' hardly ever needs treatment but cold applications limit the extravasation of blood. A hæmatoma of the auricle if seen early requires aspiration and the injection of 'hyalase', 1 to 2 ml. Otherwise the clot must be evacuated, the wound plugged and allowed to granulate from the bottom.

CONCUSSION

This is caused by a direct blow to the jaw, an accumulation of the effects of blows on the head, or by the head striking the floor of the ring. Most boxers regain consciousness by the count of ten and can be assisted to their corner. If consciousness has not been regained by the end of the count the boxer should be allowed to recover on the floor of the ring. His head should be supported and turned to one side, making sure that there is a good airway. On recovery he should be carried to his corner. He should not be stimulated in any way: e.g. by having his ears rubbed or smelling salts applied to his nostrils. If he remains unconscious for any length of time he should be removed from the ring on a stretcher and sent to hospital for observation. If there is retrograde or post-traumatic amnesia, even without loss of consciousness, this should be treated as concussion and the patient admitted to hospital. After concussion the minimum period off boxing is four weeks. In cases of severe concussion an electroencephalogram (E.E.G.) may be advisable, but this must be done within two weeks of the injury. Any abnormality found would indicate a longer period off boxing. The E.E.G. is not pathognomonic; during the 1957-1958 season, 17 boxers were referred for E.E.G. examinations after severe concussion and no abnormality was found.

Fracture of the skull and *intracranial hæmorrhages* (seven cases in 13 years) are so rare as not to warrant mention.

Fractures of the jaw are also rare. The average is about two a season. A boxer should be given first-aid treatment and, if there is a dislocation present, this should be reduced first by pressing on the lower molar teeth downwards and backwards while moving the chin upwards; he should then be sent to a maxillo-facial unit. Boxing should be forbidden for six months.

Serious eye injuries are also very rare. I have seen two cases of detached retina in amateur boxers in thirty years.

FRACTURES AND SPRAINS

The commonest fractures are of the first metacarpal. Fracture of the shaft usually occurs within the proximal third of the bone. Any significant displacement or angulation should be corrected by manipulation under an anæsthetic followed by immobilization for three to four weeks. This is followed by active movements; painless function is restored in six to eight weeks.

The Bennett type of fracture of the base of the first metacarpal involves a true dislocation of the first carpo-metacarpal joint. Reduction is carried out by skin, pulp or skeletal traction for three weeks, applied to the thumb in abduction which is incorporated in a below elbow plaster-of-Paris cast. Immobilization is maintained for a further three weeks, followed by active movements. Boxing can be resumed after three months.

Fractures of the shafts of other metacarpal bones seldom require anything more than plaster-of-Paris protection for a week or so. If there is angulation or shortening due to overlap, manipulative correction should be undertaken and the wrist and metacarpals immobilized for three to four weeks. Boxing can be resumed after eight weeks.

The commonest joint to be damaged is the first metacarpo-phalangeal joint. There may be extensive damage to the capsule with possible rupture of a collateral ligament, or a chip of bone may be avulsed. Immobilization in semiflexion for three weeks is essential, followed by active exercises. Operative repair may become necessary. Boxing may not be possible for six weeks. Sprains of the inter-phalangeal joints should be treated on similar lines.

Fractures of the limb bones and injuries to other joints are extremely rare in boxing, although I have had to replace displaced semilunar cartilages in the ring and have seen one case of a dislocated hip!

Many boxing injuries can be prevented by the wearing of bandages over the metacarpals, the use of gum shields and laceless gloves weighing 8 ounces (227 g.), and by having a 'sorbo' rubber covering under the canvas of the ring.

J. L. BLONSTEIN, M.R.C.S., L.R.C.P., D.I.H.
Honorary Medical Officer, Amateur Boxing Association;
General Secretary, Medical Commission, Amateur
International Boxing Association.

NOTES AND QUERIES

Prevention of Seasickness

QUERY.—My whole family is about to embark on a six weeks' sea voyage which includes the Bay of Biscay in the bad season. In the past I have suffered from seasickness with proverbially canine intensity day in and day out. I have tried 'dramamine' on two cross-channel trips which has prevented the nausea but produced in its place an effect of porcine stupor on the ship and a sensation of mild alcoholic intoxication for many hours after landing.

Is there any pharmaceutical or other way of effecting a compromise? If the former, what sort of dosage should children of 8 and 5 years have?

REPLY.—The United States Army, Navy and Air Force Motion Sickness Team carried out an extensive investigation of the relative efficiency of 26 substances used in the prevention of motion sickness (*J. Amer. med. Ass.*, 1956, **160**, 761). The drugs were given to 16,920 soldiers and airmen on Atlantic crossings and they were compared with inert tablets. Vomiting occurred in 23% of those receiving no medication. It was less common in older men, those who had made the crossing previously and in those quartered amidship. The most significant benefit was conferred by 50 mg. of meclozine ('ancolan') once or thrice daily, by 50 mg. of cyclizine ('marzine') once or thrice daily or by 25 mg. of promethazine ('phenergan') thrice daily. Side-effects were no more frequent than when inert tablets were used except that promethazine produced drowsiness.

For long sea voyages a single dose of 50 mg. of meclozine a day would seem to be adequate for an adult and should reduce the chances of seasickness to about 5%. In this dose it may give rise to a little drowsiness and in the first instance 25 mg. could be taken one hour before the start of the journey and every morning thereafter. Children between the ages of 5 and 10 should receive half this dose. Alternatively, cyclizine may be taken in a dose of 50 mg. three times a day by adults and in half this dose by children between 5 and 10 years old.

PROFESSOR E. J. WAYNE, M.D., F.R.C.P., F.R.F.P.S.

Vitamin C and the Common Cold

QUERY.—Advertisements in the medical press and an article in a daily paper have advocated the use of large doses of vitamin C in the common cold. Is there reliable evidence that this treatment is of value? What doses are advised for infants, children and adults?

REPLY.—I know of no evidence that large doses of vitamin C have any effect upon the common cold therapeutically or prophylactically. Vitamin C is an extremely safe substance to take so that it is not necessary to define clearly the difference between the dose for infants, children and adults. The B.P. dose for ascorbic acid is 25 to 75 mg. daily as a prophylactic and 0.2 to 0.5 g. daily therapeutically.

A. H. DOUTHWAITE, M.D., F.R.C.P.

Post-Herpetic Neuralgia

QUERY (from a reader in New Zealand).—A male patient, aged 60 and otherwise physically well, has suffered from intractable intercostal post-herpetic neuralgia for five years. In an article in *The Practitioner* (1957, **179**, 421) Dr. W. Ritchie Russell recommended 'vigorous massage, exercises, local lignocaine and electric massagers' for pain relief in post-herpetic neuralgia. I would be most grateful if you could give an account of how such treatment should be carried out, and recommend an electric massager.

REPLY.—The treatment referred to was described in the *Lancet*, 1957, **i**, 242. Although the lesion in herpes zoster is in the root ganglia there is often a remarkable amount of cutaneous hyperæsthesia, as well as some sensory loss, in the neighbourhood of the former rash. Protecting the sensitive area is a common mistake in treatment, for the hyperæsthesia can be removed by vigorous local therapy. An electric massager is especially useful. It should be used with a vulcanite applicator and applied gently and steadily (without moving it) to a sensitive spot for five minutes at a time. This has a powerful local anæsthetic effect which may be repeated by the patient himself every one or two hours at first until the skin is thoroughly numbed. The resulting relief of pain is often very striking, but this should be supported by vigorous general and local exercises all of which tend to raise pain thresholds. There are, of course, special problems when, as in this case, the pain has already been present for five years. Sometimes a twice-weekly injection of 0.5 ml. of 6% saline solution into the interspinous ligament corresponding to the segment involved, first aggravates and then relieves the pain in chronic cases. In dealing with chronic pain the best results are often obtained by the most enthusiastic therapist—a strongly positive, always-try-something attitude is the one to cultivate by those who work in pain clinics.

With regard to the vibrator to use, any one will do, but the cheapest variety operates on the alternation of the electric current supply and the 'pifco' machine is entirely suitable.

W. RITCHIE RUSSELL, C.B.E., M.D., F.R.C.P.

Mongolism

QUERY.—One of my patients, aged 38, whose husband is aged 40, had her first baby last October. She had been married about four years, had never had a miscarriage, and there was no antenatal bleeding or retroversion of the uterus. She is healthy and has never had rheumatic heart disease. From birth the male baby showed signs which were most suspicious of mongolism. The head was short, the eyes close set, the bridge of the nose flattened, the tongue long and always protruding. Hands and feet had very short terminal phalanges. The limbs were markedly hypertonic. The mother had plenty of milk but the baby did not suck and had to be bottle-fed. The baby died at the age of four weeks, due to asphyxia. Necropsy did not show a congenital disorder of the heart.

The parents are anxious to have another child if the outlook that the baby will not suffer from mongolism is a good one. What is the answer? Are deliveries of more than one mongol by one mother common? Should this patient be dissuaded from a further pregnancy on account of her age and her previous history?

REPLY.—We now have a large series of families in which there is a mongol child. From this it appears that there is an increased risk for later births once one mongol has been born, but the increase is a small one, and only about double that of any woman of the same age. In this case the risk would be about 1 in 60, instead of about 1 in 120, if she has a baby when she is 40.

C. O. CARTER, B.M., M.R.C.P.

Bequeathing Corneæ and Bodies

QUERY.—A patient of mine wishes to bequeath (a) her corneæ and (b) her body for dissection. Could you tell me what arrangements should be made before her death?

REPLY.—(1) *Bequest of eyes for corneal grafting.*—The Corneal Grafting Act, 1952, made legal provision for those who wish to bequeath their eyes for corneal grafting. The person concerned must express his wish either verbally or in writing before two witnesses; after death and before the bequest is executed the consent of near relatives must be obtained, for without this it is nullified. As soon as possible after death the nearest ophthalmic centre or special centre where corneal grafting operations are performed should be notified either by the doctor in attendance or by relatives. A centre which maintains an 'eye bank' will send a member of its staff with the necessary experience to remove the eyes so that the grafts can be obtained within ten hours of death.

(2) *Bequest of a body for dissection.*—The right of disposal of a person's body rests after death with the next of kin or the executors of the will. Persons desirous of leaving their bodies for dissection must therefore convey their wishes to their executors and/or to near relatives (who are likely to be next of kin at the time of death) and satisfy themselves that there will be no objection on the part of these persons. The intention should be set out in writing, duly signed and the necessary steps taken to ensure that the document is readily available on decease.

The following legal requirements must also be satisfied. Not less than 48 hours after the time of death a form A.A.1 (obtainable with full instructions from H.M. Inspector of Anatomy, Ministry of Health, Savile Row, London, W.1) must be sent by the executors or next of kin, requesting the removal of the body for anatomical examination. With this form must also be sent a certificate stating the cause of death signed by a medical practitioner in accordance with Section 9 of the Anatomy Act, 1832. The necessary arrangements will then be made by H.M. Inspector of Anatomy for the removal of the body and the Registrar's certificate for disposal is given to the undertaker who carries out the arrangements.

From this point the Professor of Anatomy of the medical school concerned is responsible for the body and subsequent burial which must be within two years of death.

H. A. CONSTABLE, M.R.C.S., L.R.C.P.

Androgens and Orgasm

QUERY.—A patient, aged 42, complains of inability to experience orgasm. The menstrual history is regular and she has two sons aged 17 and 12. A gynæcologist reports no abnormality. She appears well adjusted with no inhibitions, but has only experienced orgasm on four or five occasions (three in the past two years). She 'gets so near and then the urge recedes'.

Recently she improved on a course of 'mixogen' (1 tablet twice daily for four weeks) without, however, achieving orgasm. Would a course of methyltestosterone, 10 mg. thrice daily for two weeks help? If so, is there any risk of virilism?

REPLY.—There appear to be many women who have considerable difficulty in achieving orgasm, and not a few who seem to be completely unable to do so. Quite often failure to achieve orgasm seems to be due to lack of sufficient direct stimulation of the clitoris so that coitus itself, no matter how prolonged, may fail to bring about the required degree of sexual arousal. My advice in the first place therefore

would be that direct stimulation of the clitoris should be practised either before, during, or after coitus itself.

Some women experience appreciable enhancement of sexual responsiveness when treated with androgens. The fact that some kind of response was observed while under treatment with 'mixogen' suggests that the patient in question might come into this group. I would agree that methyltestosterone alone would probably be preferable, but the dose of 10 mg. three times a day is undoubtedly excessive. Ten milligrams daily might be given for two to three weeks out of four and there would be very little risk of virilizing changes, though with a higher dose and more prolonged treatment virilization could be expected. The sensitivity of women to androgens varies greatly and even with as little as 10 mg. a day some women might develop acne or start to grow facial hair. Provided treatment is stopped as soon as such untoward signs appear, regression can confidently be expected.

G. I. M. SWYER, D.M., M.R.C.P.

Marital Respiratory Harmony

QUERY.—I have often noticed, when lying close to my wife—she is asleep, I am awake—that our breathing quickly comes into phase. If I deliberately breathe out as she breathes in, and try to maintain this opposite rhythm, her breathing alters its rhythm until it matches mine once again. Is this a well-recognized phenomenon, and could someone give me an explanation?

REPLY.—It is tempting to advance the plausible explanation that the inquirer involuntarily changes his own respiratory rhythm, and not the reverse. But assuming—as I am sure he would prefer—that his observation is correct, it is well known that external impressions can affect a sleeper, producing physiological effects without awakening him (her). The weary doctor who sleeps soundly through the noise of an air-raid, is instantly roused by the tinkle of the telephone or night-bell, the anxious mother by the slightest movement of her sick child. Modification of respiratory rhythm comes into this category of conditioned reflexes; the sound or possibly touch of the husband's respiration acts as the specific stimulus.

It would be of interest to pursue some simple investigations: does the phenomenon occur every night or only occasionally, in which case can any antecedent circumstance (of 'hypnotic' character) be identified? Can he trace any relation to the depth of sleep which alters considerably throughout the night with corresponding alteration in the threshold of alertness? I have little doubt that the inquirer is by no means unique!

SIR ADOLPHE ABRAHAMS, O.B.E., M.D., F.R.C.P.

PRACTICAL NOTES

Perphenazine in Nausea and Vomiting of Pregnancy

'PERPHENAZINE in suppository form appears to be the agent of choice in controlling nausea and vomiting of pregnancy, because of its rapid absorption, prolonged action, and freedom from serious side-effects', according to C. H. Birnberg and his colleagues (*American Journal of Obstetrics and Gynecology*, February 1959, **77**, 438) as a result of their experience in 67 cases. Symptoms were severe in 22 patients, moderate in 31, and mild in 14. Suppositories, containing 8 mg. of perphenazine, were prescribed for administration before bedtime and on awakening. Treatment was continued for as long as necessary: this amounted to one week for two patients, two weeks for 10, three weeks for 22, four weeks for 11, five weeks for eight, six weeks for six, seven weeks for one, and eight weeks for two. The remaining five patients were still receiving treatment when the report was prepared. The suppositories 'proved to be strikingly effective': 56 (84%) of the patients were completely relieved of nausea and vomiting. The drug took effect rapidly—usually within thirty minutes—and the effect was long-lasting. Eighteen patients experienced mild side-effects: drowsiness in nine, dizziness in three, and drowsiness and dizziness in six. These were eliminated, or substantially reduced, by halving the dose of perphenazine.

Evacuant Suppositories

THE use of evacuant suppositories in the treatment of constipation in hospital patients is discussed by G. Church (*Scottish Medical Journal*, February 1959, **4**, 94), who compares the results obtained with suppositories of glycerin, 'dulcolax', and an inert material in 102 patients in the general medical wards of the Victoria Infirmary, Glasgow. Most patients were over 50 years but their ages ranged from 22 to 91, and they included 18 cases of bleeding peptic ulcer. Only those patients who had been constipated for at least four days in the wards were selected, and drugs likely to cause purgation were with-

held. A result obtained after three hours was regarded as not due to the suppository and was disregarded in assessing the percentage of successes. All patients were first given the inert suppository, which was successful in 12 cases (12%). Glycerin and 'dulcolax' were then tried on alternate patients, and glycerin was effective in 29 of 52 cases (58%) in which the inert suppository had failed and in one of which 'dulcolax' had also been unsuccessful. 'Dulcolax' was effective in 42 of 53 cases (84%) in which the control had failed and in 14 of which glycerin had also failed. In the twenty cases in which both glycerin and 'dulcolax' were used, 'dulcolax' was successful in 13 where glycerin was not, glycerin was successful in one where 'dulcolax' was not, and both were ineffective in six. It was concluded that '"dulcolax" would appear to be the more reliable agent'. Side-effects were not pronounced and no recurrence of bleeding appeared to result from this treatment in the bleeding peptic ulcer patients, in whom it is of special value as it avoids delay in obtaining stool samples for fæcal occult blood studies. Other advantages of this method of evacuation are that it is less disturbing to the patient than an enema and less trouble for the nursing staff.

Treatment of Ear Infections

A COMBINATION of polymyxin B, neomycin and bacitracin is recommended as the 'most effective topical medication' in the treatment of external otitis and to a lesser extent in the treatment of chronic otitis media, by William H. Saunders and his colleagues (*Postgraduate Medicine*, February 1959, **25**, 176). In a study of 182 patients they found that the microflora in the ears of the 132 with otitis externa or otitis media differed significantly from the microflora in the ears of the 50 patients without ear infection. In contrast to the relatively few species of bacteria in normal ears (mainly coagulase-negative *Staphylococcus albus* and diphtheroids), many different bacteria were isolated from the infected ears (mainly staphylococci, streptococci and gram-negative organisms). Most of the infected ears had a mixed bacterial flora, a single organism being isolated in only 30%, and it was 'common to find gram-positive cocci in association with gram-negative rods'. Only 3% of the infections were due to fungi. Determination of the bacterial sensitivity to common antibiotic drugs by the paper disc method showed that polymyxin B, neomycin and bacitracin in combination have the following advantages: (1) They are effective against gram-positive and gram-negative bacteria. (2) They are seldom used systemically and therefore sensitization to broad-spectrum antibiotics such as tetracycline is avoided. (3) They have a comparatively low sensitizing index.

Prednisone and Cardiac Œdema

THE value of prednisone in the treatment of intractable cardiac œdema is discussed by D. A. Newman (*New York State Journal of Medicine*, February 15, 1959, **59**, 625). It is emphasized that this is a form of treatment which should only be used in cases in which the œdema is continuing to increase in spite of the use of diuretics. The dosage schedule used was an initial dose of 2.5 mg. of prednisone daily. This was increased cautiously to from 15 to 20 mg. a day, for four to five days, and then gradually decreased over a varying time interval, depending upon the patient's response to the mercurial diuretic that was given 'after the priming with prednisone'. The maintenance dose varied from 2.5 to 10 mg. (average 5 mg.) a day. It is stated that 'there appears to be a critical dose level that varies with each patient's responsiveness at which a given amount of prednisone will have either a predominantly sodium-retaining or sodium-excreting and diuretic effect. One has to find that dose level empirically for each patient'. In a series of 10 patients, whose ages ranged from 60 to 85, a 'good' remission was obtained in eight. 'The most gratifying feature in all of the eight successful cases', it is noted, 'was the subsequent return of responsiveness to diuretics'. In an addendum it is reported that five further patients in intractable failure have responded successfully to prednisone therapy. All the patients in the series had been under treatment for congestive heart failure for two or more years, and all had become unresponsive to all other forms of diuretic therapy. Their condition, when prednisone therapy was instituted, was 'grave and seemed hopeless'.

'Cough' Fracture of the Ribs

DURING the period, March 1949 to June 1958, N. Wyn-Williams and R. D. Young (*Tubercle*, February 1959, **40**, 47) encountered 71 cases of 'cough' fracture of the ribs among the patients seen at the Bedford Chest Clinic. In none of these patients was there any history of injury or of local or generalized disease of the bone. In the series as a whole there was a preponderance of women (43, compared with 28 men). This was due to a striking preponderance in the under-40's: 27 women, compared with only two men. In the fifth decade the sex incidence was equal (9 women and 9 men), whilst in the later decades there were more men (17) than women (7). The principal etiological factors were: cough without abnormal physical signs in the chest or radiographic abnormality 22; chronic bronchitis

19; pneumonia 9; acute bronchitis 7; bronchiectasis 6; pulmonary tuberculosis 2. In two patients the fractures were caused by sneezing and in one while straightening up after stooping. A total of 115 ribs were fractured: 69 on the right and 46 on the left. Three patients had fractures on two occasions, and one on three occasions. In seven patients fractures were present on both sides at the same time, the largest number of ribs fractured being five. The 7th rib was affected most commonly, and the farther away a rib was from the 7th, the less likely was it to be fractured. In one of the patients the fracture of the rib was associated with pneumothorax and subcutaneous emphysema. This is said to be the first occasion in which pneumothorax has been recorded as a complication of 'cough' fracture.

Bentonite Flocculation Test in Rheumatoid Arthritis

THE bentonite flocculation test is an 'accurate, simple, inexpensive, and dependable laboratory aid for the diagnosis of rheumatoid arthritis', according to R. A. DelToro and his colleagues (*Journal of the American Medical Association*, January 24, 1959, **169**, 315). Of 48 patients with definite rheumatoid arthritis, 40 (83%) gave positive results, whilst of 12 classified as 'probably having rheumatoid arthritis', four (33%) gave positive results. Of 35 patients with other rheumatic conditions, only three gave positive results, and two of these had been diagnosed as combined cases of gouty and rheumatoid arthritis. In a group of 48 patients, who, because of the nature of their illness, could conceivably have abnormal protein production and consequently be more likely to give a false-positive reaction, only one gave a positive result. This group included nine patients with chronic or acute liver disease, and none of these gave a positive result. In this connexion it is noted that with other serological tests for rheumatoid arthritis, 16% of patients with liver disease have been reported as giving a false-positive result.

Comparable findings are reported by K. J. Bloch and J. J. Bunim (*Ibid.*, p. 307), who give a detailed account of how to perform the test. They obtained positive results in 85% of verified cases of rheumatoid arthritis, whereas there were only 3% of false-positives among 429 controls.

Accidental Ingestion of 'Clinitest' Tablets

IN recording a case of œsophageal stricture due to the accidental ingestion of 'clinitest' tablets, C. Zimmermann (*A.M.A. Journal of Diseases of Children*, January 1959, **97**, 101) notes that it is the sixth case to be reported. He draws attention to the fact that these tablets contain a combination of anhydrous sodium hydroxide, copper sulphate, citric acid and sodium bicarbonate. When added to a solvent, boiling is produced by the heat of solution of the anhydrous sodium hydroxide and by the neutralization reaction between sodium hydroxide and citric acid. If such a tablet is accidentally ingested, the heat produced, in addition to the caustic action of the sodium hydroxide, can cause a thermal and caustic burn, with resultant scarring and stricture. In addition, there is probably an irritant and astringent action from the copper sulphate. The case he reports is that of a 3½-year-old girl who had started vomiting one week after a visit to her grandmother. Over a period of three weeks the vomiting became steadily worse and when she was finally admitted to hospital she was found to have a stricture of the œsophagus just above the level of the carina. A detailed history revealed the fact that the grandmother was a diabetic who used 'clinitest' tablets to test her urine, and that during her visit the child had swallowed one of these tablets. After admission to hospital complete obstruction developed at the site of the stricture, and the stenosed segment had to be resected, followed by an end-to-end anastomosis.

Lithographer's Dermatitis

'DERMATITIS', as H. M. Levin and his colleagues (*Journal of the American Medical Association*, February 7, 1959, **169**, 566) point out, 'is an important occupational hazard of lithographers'. They have therefore made a study of 100 men in the industry, 76 of whom had, or had had, dermatitis: the remaining 24 were treated as a control group. A clinical diagnosis of contact dermatitis was made in 60 of the first group. On patch testing, 47 (78.3%) of those with contact dermatitis gave positive reactions to one or more of the occupational contactants, compared with only 16 (40%) of the 40 subjects with diagnoses other than contact dermatitis. Whilst hexavalent chromium, present as the dichromate, was found to be the most important factor concerned, it is considered that the defatting of the skin by soaps and lipid solvents, trauma, and contact with acids and alkalis render the skin more susceptible to the action of primary irritants and allergenic agents. Prevention is difficult, as rubber gloves are too cumbersome and barrier creams are likely to interfere with the printing process. It is recommended, however, that any lithographer showing evidence of skin disease be transferred to some other job. Patch testing is of little value in eliminating the predisposed worker, as prolonged contact is necessary before sensitization develops.

REVIEWS OF BOOKS

Urology in Outline. By T. L. CHAPMAN, CH.M., F.R.C.S., F.R.F.P.S. Edinburgh: E. & S. Livingstone Ltd., 1959. Pp. vii and 176. Figures 138. Price 27*s.* 6*d.*

THIS introduction to urology is based upon the principle that most students possess a visual memory and are enabled to grasp a fact or problem easily by seeing it illustrated in a clear manner. The drawings and diagrams are so explicit and well chosen that it is hardly necessary to refer to the text at all, which the author himself describes as short and supplementary. It is to be hoped that the average medical student will not be led to think that this is yet another book on a special subject about which it is unnecessary to know much, and which is unlikely to loom large in any examination which may have to be faced. This, of course, is far from the truth as here we have a large, progressive and important part of surgery presented in a lucid and easily digestible form. If any criticism is possible, it is that the line drawings might have been executed with a little more finesse without, presumably, adding to the cost of production.

A most interesting and readable little book which should be recommended strongly to all students and hospital residents.

Fungous Diseases and Their Treatment. Edited by R. W. RIDDELL, M.D., F.R.C.P.ED., and G. T. STEWART, M.D., D.T.M. & H. London: Butterworth & Co. (Publishers) Ltd., 1958. Pp. xvii and 264. Figures 145. Price 45*s.*

AT a symposium on fungous diseases held at the Institute of Diseases of the Chest, Brompton Hospital, under the ægis of the British Postgraduate Medical Federation in July 1957 workers from various parts of the world actively engaged in the study of fungous diseases presented papers on different aspects of these diseases and this book brings together these papers, condensed and edited. Part I is concerned with pathology, clinical features and epidemiology, part II with treatment. *Tinea* infections, *monilia* infections of the skin, of the vagina, and in infants, and following antibiotic treatment, infections with actinomycetes and *Aspergillus* and *Histoplasma* are dealt with in considerable detail and with the aid of many excellent illustrations. In part II both old and new forms of treatment are surveyed with some detailed study of possibly specific substances such as nystatin and amphotericin B. The book is attractively produced, well indexed and easy to refer to. It provides a concise and authoritative review of the subject and should be of interest particularly to pathologists, dermatologists, pædiatricians and chest and general physicians.

Difficult Diagnosis. By H. J. ROBERTS, M.D. Philadelphia and London: W. B. Saunders Co., 1958. Pp. xi and 913. Figures 99. Price £6 13*s.*

THIS is an attempt to bring together groups of related diseases often producing puzzling illness, and the arrangement in part I is somewhat on the lines of 'French's Index of Differential Diagnosis'. Each grouping is preceded by a systematized list of conditions that have to be considered in the differential diagnosis, and these are discussed in detail in the text which follows. In principle this is clearly a good idea and some of the headings are stimulating and original, such as medico-surgical problems relating to abdominal symptoms, iatrogenic illness and obscure postoperative complications. Another helpful feature is a section on 'dermadromes', that is skin lesions which are associated with generalized disease. Part II consists of a classification and analysis of useful diagnostic procedures, clearly set out and modern, but too numerous for English practitioners. As the book has obviously entailed an immense amount of labour it seems somewhat churlish to have to say that it just does not 'come off', although allowance must be made for the bias of the reviewer, who dislikes 'lists' and the prolixity of American medical English. This last makes particularly for lack of rapport. The lists are for the most part much too long, and although there are a great many facts of interest in what follows—his views on the frequency of steroid ulcers are an example—yet the book does not stand up to the acid test of giving help in actual bedside problems.

Whilst this book as a whole seems tedious, yet it is certainly up to date, and until something better is produced on this side of the Atlantic it can be recommended, with reservations, for large hospital reference libraries.

Rehabilitation Medicine. By HOWARD A. RUSK, M.D., *et al.* London: Henry Kimpton, 1958. Pp. 572. Figures 172. Price 90*s.*

THIS book constitutes a valuable basic textbook on rehabilitation. The need for rehabilitation and the scope and aim of the service provided are explained in the opening chapter. Emphasis is rightly placed on the accurate evaluation of each individual case, and the evaluation process (clinical, psychological and vocation assessments) is clearly and concisely explained in a most interesting style. The following chapters

give excellent accounts of the principles of physical medicine and methods of treatment including therapeutic exercises, muscle re-education and occupational therapy; rehabilitation nursing, appliances, splints and numerous 'self-help' devices are clearly described with some excellent illustrations. Part II is devoted to the practical applications of rehabilitation in a wide variety of diseases and disorders; the same basic approach is maintained, emphasizing the importance of understanding the problems of, and working with, disabled patients. Each patient's programme must inevitably be an individual one, carefully planned with 'phased goals' and faithfully executed with the help of the trained team. If the disability and handicap are to be eliminated or reduced effectively, it is of vital importance that practitioners and consultants concerned with the care of the patient should appreciate their own role and responsibilities.

This book meets a very real and long-standing need, and should have a wide appeal to practitioners and consultants alike. Both editor and publishers are to be congratulated on such an excellent, concise yet comprehensive introduction to rehabilitation medicine.

Electrocardiogram Clinics. By JOSEPH E. F. RISEMAN, M.D., and ELLIOT L. SAGALL, M.D. New York and London: The Macmillan Co., 1958. Pp. xi and 259. Illustrated. Price 73*s.* 6*d.*

THIS book claims to illustrate the practical use of the electrocardiogram in the management of patients with heart disease and it is based on courses in electrocardiography given to practising physicians. There are four 'clinics' (chapters) covering diagnosis and treatment of angina, the electrocardiogram in cardiac infarction, problems in diagnosis of cardiac infarction and the electrocardiogram in pulmonary embolism. Each chapter has several illustrative cardiograms and each is interpreted; after this there are questions and answers which make somewhat tedious reading. There is little mention of the effect of exercise on the cardiogram of patients with ischæmic heart disease, and few experienced cardiologists would agree with the statement that 'negative results (on exercise) are obtained in half the patients with known angina pectoris'.

The importance of interpreting electrocardiograms in the light of a careful history is illustrated in several cases, and the integration between clinical appraisal and the additional evidence from electrocardiography in diagnosis is well shown. The book is perhaps rather large for the amount of information and illustration it contains.

The Comparative Anatomy and Physiology of the Nose and Paranasal Sinuses. By SIR VICTOR NEGUS, M.S., F.R.C.S. Edinburgh: E. & S. Livingstone Ltd., 1958. Pp. xv and 402. Illustrated. Price 70*s.*

IT is now thirty years since the author's great book 'The Mechanism of the Larynx' was published. In 1949 there appeared a shortened and modernized version of the original work, 'The Comparative Anatomy and Physiology of the Larynx'. The book now published completes a vast task and it will be of the greatest interest to all ear, nose and throat surgeons, and also to anatomists, physiologists and many others. It is beautifully produced and profusely illustrated. The olfactory function of the nose is dealt with exhaustively; then the functions of the nose in respiration, the air-conditioning mechanism and the function of the nose in phonation. Ciliary action, both normal and disordered, is fully described and, most interestingly, the exchange of fluid in the nose and respiratory tract. Finally, there are sections on the comparative anatomy and physiology of the paranasal sinuses and the anatomy of the nose and accessory sinuses. Excellent features are the short introductions to the various sections and the summaries at the end of each chapter.

What You Can Do For Angina Pectoris and Coronary Occlusion. By PETER J. STEINCROHN, M.D., F.A.C.P. Sydney and London: Angus and Robertson, 1959. Pp. xxiv and 182. Price 25*s.*

THIS is a vade-mecum for the intelligent patient with angina pectoris who seeks general information about his trouble to supplement his physician's advice that is perhaps too often summarily given owing to lack of time. To gain the proper atmosphere of encouragement the book should be read superficially then carefully. Whatever his temperament may be, the sufferer will find most of his questions succinctly dealt with, enabling him to work out his best way of life in the circumstances. The author has done a hard task well.

Marriage and Personality. By AINSLIE MEARES, M.B., B.S., D.P.M. Springfield, Illinois: Charles C Thomas; Oxford: Blackwell Scientific Publications, 1958. Pp. x and 157. Price 30*s.*

THE subtitle of this work is 'A Psychiatric Study of Interpersonal Reactions for Student and Layman', but it could be of interest to the family doctor. It is written in the simplest language, and is somewhat naïve in presentation, but is sensible and direct. There is no index, and no bibliography. The author draws upon

his clinical experience as a psychiatrist in Melbourne, Australia, to discuss the relationships of husband and wife in terms of personality types, e.g. how extroverts, introverts and obsessionals react on one another. The principal lesson imparted is that people should get to understand each others' personalities and not try to change them. Modes of behaviour are fully described; but there are no deep psychopathology, no complicated theories, and no recondite terminology. All technical words are explained in a way intelligible to the lay reader. The book could be of great use to those whose task it is to advise on marital problems; its biggest disadvantage is its price.

The Nursing and Management of Skin Diseases. By D. S. WILKINSON, M.D., M.R.C.P. London: Faber & Faber, 1958. Pp. 288. Illustrations 49. Price 32*s.* 6*d.*

THE aim of this book is to provide a supplement to dermatological textbooks by describing the details of management of the common skin diseases. Neither time nor circumstances permit much of this knowledge to be acquired before qualification, and this handbook will prove a valuable guide to general practitioners and the nursing profession. It can also be recommended to the trainee dermatologist. Local treatments, their correct application and removal and the principles underlying their use are clearly described. The approach to the general medical, pyschological and social problems of patients with skin disease is well presented. In the chapter on eczema and dermatitis the author stresses the importance for the nurse of an understanding of these two terms but the definitions given seem confusing. Fortunately throughout the book the terms are practically used as equivalent, etiology being indicated by an adjective, e.g. seborrhœic, atopic, contact.

The book has excellent illustrations and contains a concise formulary. Its aim is most successfully achieved.

Selected Writings of John Hughlings Jackson. Volumes 1 and 2. Edited by JAMES TAYLOR. London: Staples Press Ltd., 1958. Pp. xxii and 1010. Price £6 6*s.*

IT is difficult for the present generation to appreciate fully the influence exerted by Hughlings Jackson on current thought regarding cerebral mechanisms. Many of the conceptions which he slowly evolved between the years 1860 and 1900 have been woven into the vast additions of knowledge during the present century, and as taught now are rather easier to comprehend than in the original. Nevertheless every student of the brain likes to have this volume to refer to, and will welcome the republication of this selection of Jackson's writings which has for long been out of print.

Jackson came to look on the central nervous system as consisting of different levels or layers which are best studied by observing the disappearance or dissolution of the higher layers. He wrote little of the development of these levels in infancy and childhood but repeatedly stressed the need to consider the effect of cerebral lesions as an unmasking of a lower level. He looked on the study of focal fits as one of the richest sources of information regarding the localization of function and the term 'Jacksonian epilepsy' reflects the importance of his influence on anatomical and physiological thinking. Jackson's work on aphasia is not so well known but his approach on the basis of levels had a clarifying influence on a difficult subject. 'Words serve not only in speech but in thought', and again 'Much harm has resulted from an artificially abrupt separation betwixt mind and body. This separation, if warrantable in psychological investigations, is unmethodical in physiology'. His conceptions of cerebral functions were in many respects far ahead of most thinkers of his day.

No Miracles Among Friends. By SIR HENEAGE OGILVIE, K.B.E., D.M., M.CH., F.R.C.S. London: Max Parrish, 1959. Pp. 176. Price 18*s.*

DURING the last ten years discriminating readers of medical journals have learned that whatever else might be skipped, a lecture by Sir Heneage Ogilvie was essential reading. With a style that few other members of the profession can emulate, a refreshing candour, and an abhorrence of cant, he has presented the principles of surgery —and, indeed, of the practice of medicine—in a series of brilliantly evocative lectures. It is a selection of these lectures—essays would be a more accurate description—that has been collected and published in this book.

All of them demonstrate the author's gift for picking out the essentials of a problem, presenting them in an arresting manner and using them to illustrate some important principle. Here is no mere craftsman describing his technique, but a master of his art presenting surgery as one of the greatest of the learned professions. His motto might well be his description of Wood Jones: 'Someone eternally young, a man who can communicate for that brief hour, the fire of youth and the passion of discovery to those who sit around him'. This is a book that every doctor will treasure—the young for what it will teach them, the old for its felicitous method of presenting the principles which they have striven to follow during their professional

life. Both, however, having read it, will ask for more—and next time in the form of the author's autobiography. The occasional glimpses given in these essays of a life which started in Chile, and covers three wars, as well as a distinguished career at Guy's Hospital, whets the appetite for a full account of a career which epitomizes the outstanding features of one of the greatest eras in English Surgery.

NEW EDITIONS

Roxburgh's Common Skin Diseases, in its eleventh edition (H. K. Lewis & Co. Ltd., 37*s*. 6*d*.), has been revised by Peter Borrie, M.D., M.R.C.P., and retains all the attributes of this well-known textbook which made it the best practical guide to dermatology for the general practitioner. At the same time, careful revision has been undertaken, particularly in the sections on the use of antibiotics and steroids and the treatment of tuberculosis of the skin. The chapter on syphilis has been entirely rewritten. Wisely, Dr. Borrie has resisted the temptation to include bibliographical references. In a book such as this these are entirely uncalled for. Unlike so many of its contemporaries, this new edition is actually shorter than its predecessor. This is a book which every general practitioner ought to have on his shelves—always ready for consultation.

Recent Advances in Respiratory Tuberculosis, by Frederick Heaf, C.M.G., M.D., F.R.C.P., and N. Lloyd Rusby, D.M., F.R.C.P., in its fifth edition (J. & A. Churchill Ltd., 35*s*.) has undergone a degree of revision that for all practical purposes amounts to rewriting of the whole book. This is scarcely surprising in view of the tremendous advances that have been achieved in this field during the ten years that have elapsed since the last edition was published. In its revised form the book provides the clinician with an excellent survey of the subject, with the added advantage that the authors have not been afraid to express their own views on controversial matters. In other words, this is not a mere 'review'. It presents the considered opinions of two experts on a subject which is still of outstanding importance to the clinician at home and abroad.

An Introduction to Pathology, by G. Payling Wright, D.M., F.R.C.P., in its third edition (Longmans Green & Co. Ltd., 45*s*.), shows no major changes in arrangement or approach; a very satisfactory situation since it was an excellent book before. There is little or no increase in size (a mere 24 pages) and most of the chapters show little change. Additions of new material are found mainly in the discussion of tissue reactions in virus infections, the effects of radiation, and metabolic and endocrine reactions to trauma. Professor Payling Wright has, however, been rather conservative in his revision. One would have expected, for instance, some reference to plasma cells in the discussion of the cellular sources of antibody; and to the possible participation of aldosterone in the pathogenesis of cardiac œdema. Such topics may still be controversial; but in a book which is aimed at, and so admirably designed for, the more intelligent undergraduate and the young graduate studying for higher examinations, some concern with fashionable controversy is stimulating. Despite these criticisms, however, the book can be recommended with admiration and enthusiasm. The reviewer knows of no better exposition in English of the general principles of pathology.

Patients are People, by Minna Field, in its second edition (Columbia University Press; Oxford University Press, 36*s*.), describes a medico-social approach to prolonged illness by a social worker in New York, whose forte undoubtedly seems to be to follow the physician and to do the things which he has left undone. She asks herself why one patient consistently breaks his glasses and why another refuses to wear his dentures, and concludes that prolonged illness and hospitalization accentuate a characteristic regression. She has some very shrewd things to say about doctors. 'Only too often, the doctor, having arrived at a decision, merely informs the patient of it as the only suitable method of treatment', and she insists that, when the patient complains, any further reinforcement of authority will merely fortify him in his determination to do as he wishes. For others, discharge may represent a threat; no matter how unsatisfactory the hospital experience may have been, the world outside may be even more threatening. What can the doctor say to the cancer patient who is obviously getting worse? It is not surprising that, frustrated by his own helplessness and unable to offer a ray of hope, he evades the patient's repeated question 'what is the matter with me?', thus merely increasing anxiety. There is a great deal of repetition in this book and why, when she means 'too few beds', must she write 'paucity of custodial facilities'? The best feature is the case histories, of which that on page 210—John, the boy of 19 with advanced cancer, and his mother—is revealing and memorable.

The contents of the May issue, which will contain a symposium on 'The Menopause,' will be found on page A 114 at the end of the advertisement section.

Notes and Preparations see page 527.
Notes from the Continent see page 531.
Fifty Years Ago see page 533.
Motoring Notes see page A 93.
Travel Notes see page A 97.

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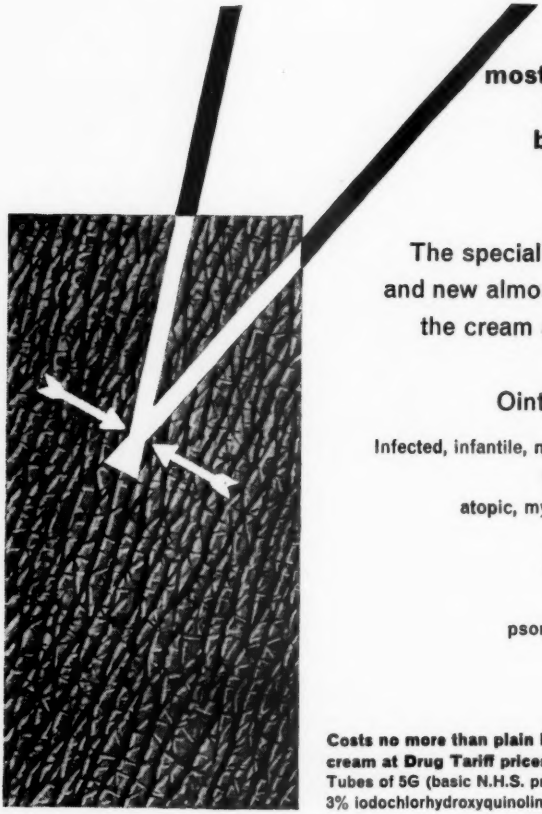

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NOTES AND PREPARATIONS

NEW PREPARATIONS

'EQUATRATE' tablets each contain 200 mg. of 'equanil' (meprobamate) and 10 mg. of pentaerythrityl tetranitrate and are said to reduce both the number and severity of anginal attacks, lessen dependence upon nitroglycerin, and, 'by breaking the pain-anxiety-pain cycle', enable the patient to lead a more normal life with increased exercise tolerance. Issued in bottles of 50 and 250 tablets. (John Wyeth & Brother Ltd., Clifton House, Euston Road, London, N.W.1.)

'PARABAL' tablets each contain 260 mg. of phenobarbitone sodium dihydroxyaluminium-aminoacetate and are said to constitute 'a completely new form of phenobarbitone therapy' in that the intake of phenobarbitone is reduced to one-sixth without loss of sedation. They are indicated in 'a wide range of medical and psychiatric disorders', including psychosomatic disorders, premenstrual tension, hypertension, and epilepsy. Available in containers of 50 tablets. (West Pharmaceutical Co. Ltd., 9 Palmeira Mansions, Church Road, Hove, Sussex.)

'SECROSTERON' tablets each contain 5 mg. of dimethisterone, a new progestational steroid with neither androgenic nor anabolic properties, which is said to be much more active than ethisterone when given by mouth. Clinical trials have shown a progestational response involving both glandular and stromal elements of the endometrium in all cases. Issued in bottles of 30 and 100 tablets. (British Drug Houses Ltd., London, N.1.)

'TRILLETS' lozenges each contain 1 mg. of framycetin sulphate, 2.5 mg. of lignocaine and 5 mg. of halopenium chloride, and are said to 'destroy virtually all the bacteria found in sore throats and infections of the mouth', and to give rapid alleviation of symptoms. Issued in tubes of 15. (Burroughs Wellcome & Co., 183-193 Euston Road, London, N.W.1.)

'VILLESCON' tablets each contain 10 mg. of 1-phenyl-2-pyrrolidinopentane hydrochloride, 5 mg. of vitamin B_1, 3 mg. of vitamin B_2, 1.5 mg. of vitamin B_6, 15 mg. of nicotinic acid amide, and 50 mg. of vitamin C, and are said to stimulate appetite and pulmonary ventilation and 'markedly improve' the patient's state of mind. They are contraindicated in patients with thyrotoxicosis. Issued in cartons of 20 and bottles of 200 sugar-coated tablets. (Pfizer Ltd. (Boehringer Products Division), 137-139 Sandgate Road, Folkestone, Kent.)

'VIONACTANE' is a mixture of viomycin sulphate and viomycin pantothenate which is intended for intramuscular injection in the treatment of tuberculosis, and is said to be particularly suitable for patients with bacterial resistance to streptomycin. Available in rubber-capped vials containing the equivalent of 1 g. of viomycin base. (CIBA Laboratories Ltd., Horsham, Sussex.)

PHARMACEUTICAL NOTES

BOOTS PURE DRUG CO. LTD. announce that their hydrocortisone preparation 'hydrocortistab lotion' is now available in an additional strength (0.25%), in plastic applicator-bottles of 20 ml. (Station Street, Nottingham.)

BURROUGHS WELLCOME & CO. announce that their preparation 'pipadone' (dipipanone hydrochloride) is now available in tablet form with the addition of 50 mg. of cyclizine hydrochloride, to be known as 'pipadone compound tablets'. Issued in bottles of 50 and 250. (183-193 Euston Road, London, N.W.1.)

CROOKES LABORATORIES LTD. announce that their preparation 'cortoderm' (hydrocortisone in 'lacto-calamine') is now available with the addition of 0.5% neomycin sulphate, to be known as 'cortoderm-N', for use in infected dermatoses. Issued in tubes of 10 g. (Park Royal, London, N.10.)

PFIZER LTD. announce that their range of prednisolone preparations now includes 'deltacortril enteric' tablets (2.5 mg.) which delay release of the active ingredient until the tablet reaches the intestine. Issued in bottles of 100 and 500. Their range of hydrocortisone preparations now includes 'cortril spray', for use in inflammatory skin conditions, which is issued in plastic-coated glass bottles containing 100 mg. of hydrocortisone free alcohol. (137-139 Sandgate Road, Folkestone, Kent.)

ROUSSEL LABORATORIES LTD. announce the introduction of 'precortisyl intravenous' containing 25 mg. of prednisolone-21-hemisuccinate in each ml. Issued in boxes containing 2 x 1-ml. ampoules and 2 ampoules of diluent. (847 Harrow Road, London, N.W.10.)

SMITH & NEPHEW PHARMACEUTICALS announce the introduction of 'welldorm' pædiatric tablets which are suitable for small children and babies. Each scored tablet contains 2½ grains (150 mg.) of dichloralphenazone. Issued in containers of 25 and 500. (Welwyn Garden City, Herts.)

JOHN WYETH & BROTHER LTD. announce that their preparation 'sparine' is now available in the form of a suspension, each teaspoonful (5 ml.) of which is equivalent to one 50-mg. tablet and is said to be 'especially suitable for geriatric and uncooperative mental patients'. Available in bottles of 115 ml. and 1 litre. (Clifton House, Euston Road, London, N.W.1.)

ROYAL SOCIETY OF MEDICINE

THE next meeting of the Section of General Practice will be held at 8.15 p.m. on Wednesday, April 15, when the subject for discussion will be 'The General Practitioner in the Midwifery Services'. The opening speakers will be Professor W. C. W. Nixon, Drs. Jean M. Mackintosh and C. W. Walker, and Miss A. Wood, Secretary of the College of Midwives.

TRAVEL GRANTS

THE English-Speaking Union invites applications from doctors in general practice (preferably in the 30's but not over 50) for a Ford Foundation-English-Speaking Union Travel Grant to visit the United States for 56 days, within the period, mid-September 1959 to June 1960. The closing date for applications is May 25, 1959, and full details and application forms are obtainable from The Secretary, The English-Speaking Union of the Commonwealth, Dartmouth House, 37 Charles Street, Berkeley Square, London, W.1.

PRIZES

THE College of General Practitioners invite applications for the 1959 *Public Welfare Foundation Prizes*, which are open to senior medical students in the United Kingdom and Eire, 'to encourage those who have taken advantage of opportunities to discuss the diagnosis and management of patients in the setting of general practice'. There will be six prizes of £40 each, and the closing date is August 1. Full details may be obtained from the Dean of the student's medical school or from the Secretary of the College, 41 Cadogan Gardens, London, S.W.3.

FILM NEWS

Birthright (35 mm., sound; running time 18 minutes) outlines the work of the Family Planning Association and includes interviews with actual patients at some of the Association's clinics. It emphasizes the seriousness of the ever-increasing world problem of overpopulation and the unhappiness that ignorance can bring to the unwanted child, to the childless couple 'and so to society itself'. Available on free loan from The Family Planning Association, 64 Sloane Street, London, S.W.1.

MANCHESTER MEDICAL EXHIBITION

THE annual regional medical exhibition organized by the British and Colonial Druggist Ltd. will be held at the City Hall, Manchester, from April 27 to May 1, 1959. The exhibition will be officially opened by Professor Sir Geoffrey Jefferson, C.B.E., at 2.45 p.m. on April 27.

THE CIBA FOUNDATION

THE Ciba Foundation, under the stimulating leadership of its Director, Dr. G. E. W. Wolstenholme, goes from strength to strength. During 1958 the Foundation organized six international conferences, four 'research fora' and two film sessions, and provided accommodation for more than 800 visitors from many countries. It is with justifiable pride that the annual report for 1958 announces that the Foundation has been honoured by a grant of armorial bearings from the Earl Marshal. The motto, 'Consocient Gentes' ('Let the nations come together') epitomizes admirably the excellent work being done by this notable organization.

THE INSTITUTE OF ALMONERS

THE fact that almoners are in short supply in hospitals, and 'even shorter in the important and developing field of public health', is emphasized in the annual report of the Institute of Almoners for the year 1957-58, which shows that at the end of 1958 there were still 219 advertised vacancies on the Institute's books. The report gives full details of available training courses, and copies may be obtained from the Secretary, Institute of Almoners, 42 Bedford Square, London, W.C.1.

INDUSTRIAL PROTECTIVE CLOTHING

IT is well known that workers wearing what is technically known as 'non-ventile' clothing to protect them against toxic hazards are liable to heat exhaustion due to the prevention of heat loss by the evaporation of sweat. This is one of the many problems being investigated at the London School of Hygiene and Tropical Medicine. According to the recently published annual report of the School for 1957-58, it has been found that external evaporative cooling by wearing a wet cotton jacket outside a non-ventile protective garment materially lessens the risk of heat exhaustion during work in temperate or tropical conditions. The wet jacket should be worn from the start of work, as body heat builds up rapidly if non-ventile protective clothing alone is worn.

MALAYAN MEDICAL RESEARCH

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Nicotinamide	50 mg.
d-α-tocopheryl acetate (Vitamin E)	10 mg.
Vitamin C	50 mg.

In Packs of 100 and 500 tablets.

Further particulars on this new product from (Dept. C.Y.I.)

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medicine. Now that the Federation of Malaya is an independent nation it is faced with the problem of recruiting an adequate staff of Malayans to maintain its work. According to the recently published annual report of the Institute, this is proving far from easy. A letter about possible vacancies, for instance, addressed to 88 Asian officers in the general medical and health service, did not evoke a single application.

Nutritional problems have always played an important part in the work of the Institute, and in the present report an account is given of an investigation carried out by Dr. F. A. Thomson into the state of health of Malayan toddlers (aged 2 to 5 years). This showed that malnutrition in toddlers is widespread. Traditional customs connected with childbirth and the postnatal period impose restrictions on the mother's diet. Breast feeding for one to two years is common, but the toddler may suddenly be deprived of this food by the arrival of a new baby. As there is a widespread belief that eggs and fish 'produce worms', many children receive nothing but polished rice and some sauce, with black tea or coffee, just at the age when a good mixed diet is essential.

INCIDENCE OF POISONING

In 1954-56, according to a WHO report, the highest death rate from poisoning (accidental, suicidal and homicidal) was in Denmark, where the annual average per million inhabitants was 182.5 for men and 130 for women. Next came Japan (157.8 for men and 94 for women), England (104.7 for men and 93 for women), Scotland (100.6 for men and 87.5 for women), and Switzerland (80 for men and 58.9 for women). The lowest rate was in Italy: 20.4 for men and 16.4 for women. The highest death rate from homicidal poisoning was in Japan (1.7 for men and 1.5 for women) and Switzerland (1.7 for men and 0.6 for women). The comparable figures for England were 0.7 for both men and women, and for Scotland 0.4 for men and 0.5 for women. In both New Zealand and Norway there were no deaths from homicidal poisoning in the period under review.

ALLERGIC REACTION TO POLIOVIRUS VACCINE

Another case of allergic reaction to the small amount of penicillin in poliomyelitis vaccine is recorded by L. Pelner (*New Engl. J. Med.*, 1959, 260, 230). This occurred in a 28-year-old man who had had a severe serum-sickness type of penicillin reaction a year previously. The day after receiving his initial injection of poliomyelitis vaccine he developed a stiff neck, which was followed by giant urticaria, fever, lymphadenopathy, exfoliative dermatitis and jaundice. The patient made a complete recovery, and some months later he received an injection of vaccine reconstituted with polymyxin B instead of penicillin, without incident or sequelæ.

A GREAT ANTHROPOLOGIST

To mark the retirement from the chair of anatomy at the University of Witwatersrand of Professor Raymond A. Dart, who discovered the Taung skull thirty-four years ago, the November 1958 issue of *The Leech*, the graduates' and undergraduates' journal of the University, is a special commemorative number. In addition to a biographical sketch of this outstanding Australian, it contains tributes to him from anthropologists in South Africa, Australia, England, the United States, The Netherlands, and France.

THE DEAF MOTORIST

The deaf motorist can be as safe a driver as any member of the community, according to F. R. Flewitt, the superintendent of the Preston Institute for the Deaf. In an article in *The Silent World* (February 1959, p. 278), the journal of the National Institute for the Deaf, he quotes a report of the Licensing Authority of Pennsylvania, a State in which there are 3,000,000 holders of driving licences, 3000 of whom are deaf. During a nine-year period not one of these deaf drivers was involved in a fatal accident or in a single reportable accident involving personal injury, whereas the same number of unhandicapped drivers would have had 400 personal injury accidents in the same period.

His advice to the deaf motorist is:—(a) Be taught by a reliable instructor from a recognized School of Motoring. (b) Have two outside rear-view mirrors, as well as an interior one, and learn to use these mirrors, 'not only to glance at them all frequently and in turn, but learn to read what you see in them'. (c) Resist the temptation to talk. 'Instead practise the police method of consciously reading the road to yourself'.

COTTON BLANKETS

'The cotton blanket has many advantages over the traditional woollen type' according to Miss Edna A. Pope, the assistant matron of The London Hospital, in an article describing the experience of the staff at her hospital with them (*Nursing Mirror*, 1959, **55**, 133). Weight for weight they give as much warmth as woollen blankets, and they have the great advantage that they can be heat sterilized without damage. They 'collect staphylococci to the same degree as woollen ones' but they can be washed and boiled frequently. The method of sterilization used at The London Hospital is by autoclaving at a pressure of 25 pounds per square inch for

twenty minutes. When this procedure was carried out for six cotton terry blankets every three days for a period of a month, it was found that the texture of the blankets remained unaltered. As there is a choice of fabrics to be selected from, it is recommended that the opinion of an expert be sought before making a final choice of yarn or fabric.

PUBLICATIONS

Outlines of General Practice, now available in its second edition, is an admirable little handbook produced by the Midland Faculty of the College of General Practitioners. It is intended for 'members of official bodies interested in and concerned with the training of general practitioners, trainers under the trainee general practitioner scheme, general practitioners with assistants, and lecturers to trainers'. It covers a wide ground, including surgical premises, the doctor's bag, dispensing in general practice, and the financial side of practice. This is a most commendable effort, of which the Midland Faculty has every reason to be proud, and the fact that a second edition has been necessary so soon indicates clearly that it meets a genuine need. Copies, price 1*s.* 6*d.* each, can be obtained from Dr. A. J. Laidlaw, Thorneloe Lodge, 29 Barbourne Road, Worcester.

Amid Masters of Twentieth Century Medicine, by Leonard G. Rowntree, M.D., presents a fascinating picture of American medicine as seen by one who has worked at the Johns Hopkins Hospital, the Mayo Clinic, and the Philadelphia Institute for Medical Research. A Canadian by birth, and an American by adoption, Dr. Rowntree is an unashamed believer in the medical supremacy of his adopted country. In its exuberant delight in the prowess of American medicine it gives a much more convincing picture than many of the more conventional books on the subject. (Charles C Thomas; Blackwell Scientific Publications, price 87*s.* 6*d.*)

Recent Progress in Psychiatry, Volume 3, edited by G. W. T. H. Fleming and A. Walk, is published under the ægis of the *Journal of Mental Science*. Whilst primarily a book for the specialist, it will appeal to all who are interested in the important advances that have been achieved in this field during the last decade. Contributions such as those on 'Psychiatric genetics', 'Cybernetics', 'The Psychiatry of major crime', and 'Surgical treatment of mental disease', are models of their kind—authoritative, comprehensive and clearly written. (J. & A. Churchill Ltd., price 42*s.*)

Poisoning by Drugs and Chemicals. by Peter Cooper, F.P.S., is accurately described by its subtitle: 'an index of toxic effects and their treatment'. Around 350 drugs and chemicals are included, and the book provides a useful compact guide to the subject—at least it would if it were not for the price which is more in keeping with current American than British standards. (Alchemist Publications, price 25*s.*)

British Red Cross Society Mental Health Manual, by D. Stafford-Clark, M.D., F.R.C.P., D.P.M., is intended 'to convey in simple and lucid terms the essentials of a first aid and nursing approach to all types of illness in which psychological disturbance plays an important part'. The illustrations are by Miss Sylvia Treadgold. (British Red Cross Society, price 3*s.*)

Holy Tooth, by Edward Samson, is the history of what is described as 'the most discussed holy relic in the world'—the right eye-tooth of the Buddha, which is housed in the Temple of the Tooth in Kandy. A little more about the tooth and its history, and a little less philisophizing about miracles, would have enhanced the interest of the book for many readers. (John Wright & Sons Ltd., price 16*s.*)

Insecticide Resistance in Arthropods, by A. W. A. Brown (WHO Monograph Series No. 38) is an authoritative review of our present knowledge in this important international health problem. On account of its clarity of style, and the space devoted to the fascinating research work on the subject, the book will appeal to many doctors apart from those primarily concerned with the use of insecticides. (H.M. Stationery Office, price 25*s.*)

National Register of Medical Auxiliaries.—The Register of Orthoptists for 1958-59 has now been published and will be supplied free to members of the medical profession, hospitals, municipal authorities and other official bodies upon application to the Registrar, Board of Registration of Medical Auxiliaries, British Medical Association House, Tavistock Square, London, W.C.1.

OFFICIAL PUBLICATION

Food Standards Committee Report on Soft Drinks.—This is the report referred to by Dr. A. H. Douthwaite in his article on 'The Therapeutic Value of Oral Glucose' (p. 482). The medical comments which have aroused so much controversy will be found tucked away in appendix B under the title of 'Sucrose, Glucose and "Liquid Glucose" as Sources of Energy. Notes by the Committee on Medical and Nutritional Aspects of Food Policy'. The names of the members of this committee are not given. (H.M. Stationery Office, price 1*s.*)

NOTES FROM THE CONTINENT

A European Newsletter

FRANCE

Bone-marrow grafts.—The French press has given tremendous publicity to the case of the Yugoslav atomic scientists who received a potentially fatal dose of irradiation as a result of an accident at an atomic energy plant in their own country. Detailed reports are not yet available, but the facts are as follows. One died as a result of irreversible lesions in the digestive tract. The others developed a severe aplastic anæmia but have recovered following the infusion of bone-marrow grafts. What is still not known is whether the newly formed blood cells have arisen from the grafted bone marrow or from islets of the recipients' hæmopoietic tissue which survived the irradiation to which they were exposed. In other words, did the bone-marrow grafts merely tide the patients over the period when there was inadequate residual hæmopoietic tissue to maintain life, or has the grafted bone marrow taken root and is developing sufficiently to maintain the normal requirements of blood cells?

Bone-marrow grafts in leukæmia.—Following the publicity attending the Yugoslav scientists, the press turned their attention to the work being done by Professor Jean Bernard on the treatment of leukæmia in children with heavy irradiation followed by bone-marrow grafts. In these cases, even more caution must be used in attempting to assess the results. As every experienced pædiatrician knows, the immediate prognosis in leukæmia is unpredictable. Hence the reason why in the past so many forms of treatment have been claimed to be successful. Not until the children so treated have been followed for a considerable time will it be possible to say whether this new form of treatment is any advance on its many predecessors. On general principles the prognosis is much gloomier than in the case of the irradiation-damaged scientists. In their case one is dealing with healthy bone marrow, whereas in the case of leukæmic children one is dealing with abnormal bone marrow.

Intra-splenic suprarenal transplantation.—Intra-splenic transplantation of the left suprarenal gland is recommended by Professor Dargent for the treatment of advanced cases of carcinoma of the breast. His treatment for such cases is a preliminary ovariectomy followed by the administration of testosterone. When this no longer controls the condition, he recommends this new procedure in place of adrenalectomy. The operation is done in two stages. At the first operation the left suprarenal gland, with its blood supply intact, is implanted in the spleen. A fortnight later the right suprarenal gland is removed. The rationale of this procedure is that it means that the output of the left suprarenal gland is drained direct through the splenic vein into the liver where the 'sex hormones' are destroyed, but the cortisone is not affected and sufficient is produced from the transplanted suprarenal gland to meet the demands of the body. In this way the necessity of giving the patient daily cortisone is avoided. The view is expressed that the only real contra-indication to this procedure is the presence of metastases in the suprarenals. In such cases, of course, adrenalectomy is required. Among 24 patients on whom he has performed intra-splenic implantation of the left suprarenal gland, 'very good' results were obtained in seven.

Cœliac disease.—Although it is now accepted that the polypeptide, gliadin, is the factor responsible for cœliac disease, and that removal of its precursor, gluten, from the diet, is an effective form of therapy, the pathogenesis of the condition is still obscure. According to Professor A. Breton and his colleagues, there is no evidence of its being an allergic reaction to gliadin, and they subscribe to the view that it is due to a deficiency of specific enzymes in the small intestine. They claim that the administration of an extract of hog intestinal mucosa helps to meet this deficiency and suggest that in this way it is possible to relax the stringency with which a gluten-free diet is enforced.

The premenstrual syndrome.—Potassium nitrate, according to J. Durlach, is the drug of choice in the treatment of the electrolyte imbalance which he considers to be the underlying factor in premenstrual tension. It is administered in the form of gelatin capsules, each containing 0.25 g. The initial dosage is 2.25 g. daily, which is reduced to a daily maintenance dose of 1.5 g. Treatment must be started on the day before the syndrome usually begins, and continued until the onset of menstruation. In 42 patients in whom he has used this form of treatment, he claims 'excellent' or 'good' results in 37. In cases in which the results are not satisfactory, he reports that the addition of meprobamate is of value.

ITALY

Virology and leukæmia.—Further evidence in favour of the viral etiology of leukæmia was presented by F. Magrassi at the 10th congress of the Italian Society for the Study of Infectious and Parasitic Diseases. He reported his results with tissue culture, using plasma from three cases of acute or subacute leukæmia, one case of chronic myelogenous leukæmia and one case of chronic lymphatic leukæmia, and cerebrospinal fluid from one of the cases of subacute leukæmia. In all cases he obtained a consistent change in culture, consisting of degenerative changes characterized by loss of clarity of the cytoplasm and vacuolization, and irregularity of the cell nuclei, with a tendency to homogenization, pyknosis and karyorrhexis. In addition, there was a change in cellular morphology, with a tendency to the development of a fibroblastic type of cell which was elongated and spindle-shaped. These cytopathological changes began to appear about the fifth day after the inoculation of the leukæmic material and were clearly evident by the tenth day. They occurred consistently up to the third passage and were obtained with dilutions of up to 1/10,000 to 1/15,000. Intracerebral inoculation in the rabbit of the cerebrospinal fluid from the case of subacute leukæmia produced a fatal meningoencephalomyelitis.

From these findings, taken in conjunction with the findings of other workers, Magrassi concludes that it is difficult to reach any conclusion other than that a virus etiology must be accepted as at least one of the prime factors in the causation of malignant disease.

Enteritis in children.—At the same congress, A. Gentili and his colleagues discussed the problem of enteritis in children. They suggested a classification into two groups: (a) primary enteritis; (b) secondary or parenteral enteritis. In discussing etiology they paid particular attention to the staphylococcal enteritis developing in children who have received prolonged courses of one of the broad-spectrum antibiotics. This dangerous condition is characterized by vomiting, diarrhœa, high fever and circulatory collapse. At necropsy the characteristic finding is an extensive pseudo-membranous enterocolitis. They accept the generally held view that the primary causative factor is the loss of the vitamin B factor due to the suppression of sensitive organisms, which allow of the overgrowth of the more virulent organisms, such as the staphylococcus, which are independent of the vitamin B complex so far as their growth is concerned.

In discussing enteritis of virus origin, they reported their findings in 50 cases of enteritis occurring either separately or during the course of three outbreaks of enteritis in an orphanage. In 43% of the sporadic cases they found an increased titre of antibodies for the influenza A virus and for the adenoviruses. The results were even more striking in the epidemic cases, in 50% of which an increase was found in the antibody titre for the APC viruses.

A cortisone hazard.—A. Martelli and P. Serra report a particularly striking, if tragic, example of the dangers of cortisone therapy. Their patient was a 35-year-old man who, while receiving cortisone for the relief of arthritis, developed a gluteal abscess. A month later he showed signs of compression of the spinal cord at the level of the second thoracic vertebra followed by signs of septicæmia. Laminectomy revealed the presence of an epidural abscess which, in spite of treatment, proved fatal. At necropsy the most striking finding was the gross disintegration of the liver and suprarenals. In reporting the case, the authors draw particular attention to the absence of signs which prevented a diagnosis of an epidural abscess being made until it was too late to save the patient's life. Until signs of spinal compression appeared there was nothing more than a slight rise in temperature, nor was there the typical severe pain of segmental distribution which normally characterizes such a lesion. The absence of these warning signs of danger is attributable to the anti-inflammatory action of cortisone.

A new sulphonamide.—In spite of the ever-increasing number of new antibiotics, there is a continuous interest in new sulphonamides. D. Gotti and G. Piazzi have just reported their preliminary findings with a new long-acting sulphonamide: 3-(*p*-aminobenzene sulphonamide)-phenyl-pyrrazole. They have confirmed laboratory findings that a single dose will maintain a satisfactory blood level for twenty-four hours, and that there is relatively little acetylation (10.4%). In a preliminary series of 50 children they found no side-effects with doses of 50 to 150 mg. per kg. body weight daily. In a further series of 30 children, satisfactory therapeutic effects were obtained when this amount in the form of a syrup was administered in two doses on the first day, and in one dose on subsequent days.

'Notes from the Continent' are produced in collaboration with the Editors of Bruxelles-Médical (*Belgium*), Le Concours Médical (*France*), Münchener Medizinische Wochenschrift (*Germany*), and Minerva Medica (*Italy*).

THE PRACTITIONER

Fifty Years Ago

'Can honour set-to a leg? No. Or an arm? No . . . Honour hath no skill in surgery, then?'
—*King Henry IV*, Part I, V. 1.

APRIL 1909

'THE profession of healing has gained in honour as well as in efficiency since the historic days when the surgeon was merely a barber who practised phlebotomy in his spare time'. That was the Editor's first reflection on the announcement that the Prince of Wales had consented to be elected a Fellow of the Royal College of Surgeons. 'The second reflection is that here is another example of the sincere and constant

Thomas Watts Eden (1863-1946), M.D., F.R.C.P., F.R.C.S.Ed., F.R.C.O.G.

interest taken by the Royal family in the advancement of our profession. The King's preoccupation alike with medical theory and with its practical application has been evinced repeatedly and in many ways. His Majesty has long watched with concern, and stimulated by his initiative, the attempt to stamp out tuberculosis, and to make an effective attack upon cancer . . . if we may turn suddenly from great things to small—the presence recently of His Royal Highness at the semi-final football cup-tie between the London Hospital and Guy's was not less gratifying to the students engaged in the contest than any graver manifestation of his sympathy with their proceedings would have been'.

The question has often been 'canvassed in both the medical and the sporting papers' whether there is any risk to a man's health involved in his taking part in the University boat-race. 'Inquirers have taken the trouble to trace the history of old Blues, inquire after their health, and compute their expectation of life. It appears that their expectation of life is approximately the same as that of their less athletic contemporaries, and that their health, as a rule, is good. A few rare cases, however, have been discovered of men who have suffered from heart trouble, or neurasthenia, and held the strain of the boat-race responsible, averring that they have never been well since they took part in it'. 'Notes by the Way' conclude that 'A man seldom gets the chance of rowing for his University unless he is strong enough, constitutionally as well as muscularly, to do so; but a sufficient number of men physically unfit for the strain creep through to make the case for competent medical supervision clear'.

The opening article in this number, from the pen of F. Parkes Weber, M.D., F.R.C.P., Senior Physician to the German Hospital, Dalston, bears the long title 'A Note on Local Anæsthesia in Regard to the Causation of "Idiopathic" Paralysis and Dilatation of the Urinary Bladder. With remarks on functional anæsthesia of mucous membranes, as found in cases of universal cutaneous anæsthesia'.

C. Arthur Ball, M.D., F.R.C.S.I., Surgeon to Sir Patrick Dun's Hospital, Dublin, describes 'The Treatment of Extroversion of the Bladder by Implantation of the Ureters into the Rectum'. R. T. Williamson, M.D., F.R.C.P., Assistant Physician, Manchester Royal Infirmary, deals with 'The Increased Death-Rate from Diabetes, and the Possibility of Preventing the Disease, or of Postponing its Onset'. P. Lockhart Mummery, F.R.C.S., Senior Assistant Surgeon to St. Mark's Hospital for Diseases of the Rectum, discusses 'Some Points in the Treatment of Ischio-Rectal Abscess and Fistula'.

According to an article, 'Rhinological Treatment of Consumptives', by W. C. Rivers, M.R.C.S., L.R.C.P., R.M.O., Newcastle upon Tyne Sanatorium, Barrasford, 'it is indeed the case that, although neglected by nearly every textbook, there exists evidence enough to make fairly certain the proposition that non-tuberculous nasal defect, such as septal deformity, atrophic and chronic rhinitis, etc., is much

commoner in consumptives than in the normal population . . . Everything would seem to point to the view that impairment of nasal respiration is a common predisposing cause of pulmonary tuberculosis . . . Is not every consumptive entitled to thorough rhinological examination, and, if necessary, to treatment?'

'Notes from Foreign Journals' quote Paul Rayner (*Académie de Médecine*) as stating that 'in cinnamate of soda, employed in the high doses recommended by Sanchez Herrero, we have a remedy which, used in conjunction with strengthening treatment, can be of great and actual service in pulmonary tuberculosis'. Fabre (*L'Obstétrique*) reports 'encouraging results' from the use of turpentine in puerperal infection. 'He states that its action—that of an internal non-toxic antiseptic—is always the same, whether the turpentine is taken by the mouth, absorbed through the skin or lungs, given by hypodermic injection, or introduced into the uterus'.

Several medical classics are reviewed this month. 'Surgical Applied Anatomy' by Sir Frederick Treves (5th edition revised by Arthur Keith) 'quite maintains its former excellence and is one which senior medical students will find to be especially useful, and worthy of careful study, just before final examinations in surgery'.

'A Manual of Midwifery' by Thomas Watts Eden, first published in 1906, attained a second edition fifty years ago: 'On its appearance the first edition of this work rapidly established itself as *the* student's textbook of midwifery, and we welcome this new edition, which, we feel sure, will even enhance its popularity'. The continued popularity of this manual is shown by the fact that an 11th edition of 'Eden and Holland's Manual of Obstetrics' (by Alan Brews) came out in 1957. Thomas Watts Eden was born in 1863 and studied medicine at Edinburgh. Settling in London, he served on the staff of the Chelsea Hospital for Women, Queen Charlotte's Hospital, and Charing Cross Hospital. In 1930 he was elected president of the Royal Society of Medicine. One of the founders of the Royal College of Obstetricians and Gynæcologists, he was editor of the *Journal of Obstetrics and Gynæcology of the British Empire* from 1904-5, and chairman of the Board of Directors from 1930 till his death in 1946. A fine speaker and writer, in his character he combined dignity, integrity, modesty, common sense, and dry humour.

'Practical Notes' contain the following prescription by Pouchet for the treatment of acute alcoholic intoxication:—

'Ammonium Acetate gr. xxx, Sea Salt gr. xxv, Infusion of Coffee ℥jss, Syr. Simplex ℥i To form two doses, to be given at intervals of 15 minutes'.

W. R. B.

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